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Mead, Warren J.
Dear family

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Dear Family,

Copyright 1959
by
Warren J. Mead
88 Rutledge Road
Belmont 78, Massachusetts

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This collection of genealogic, historic,
and anecdotic material, written by

WARREN JUDSON MEAD

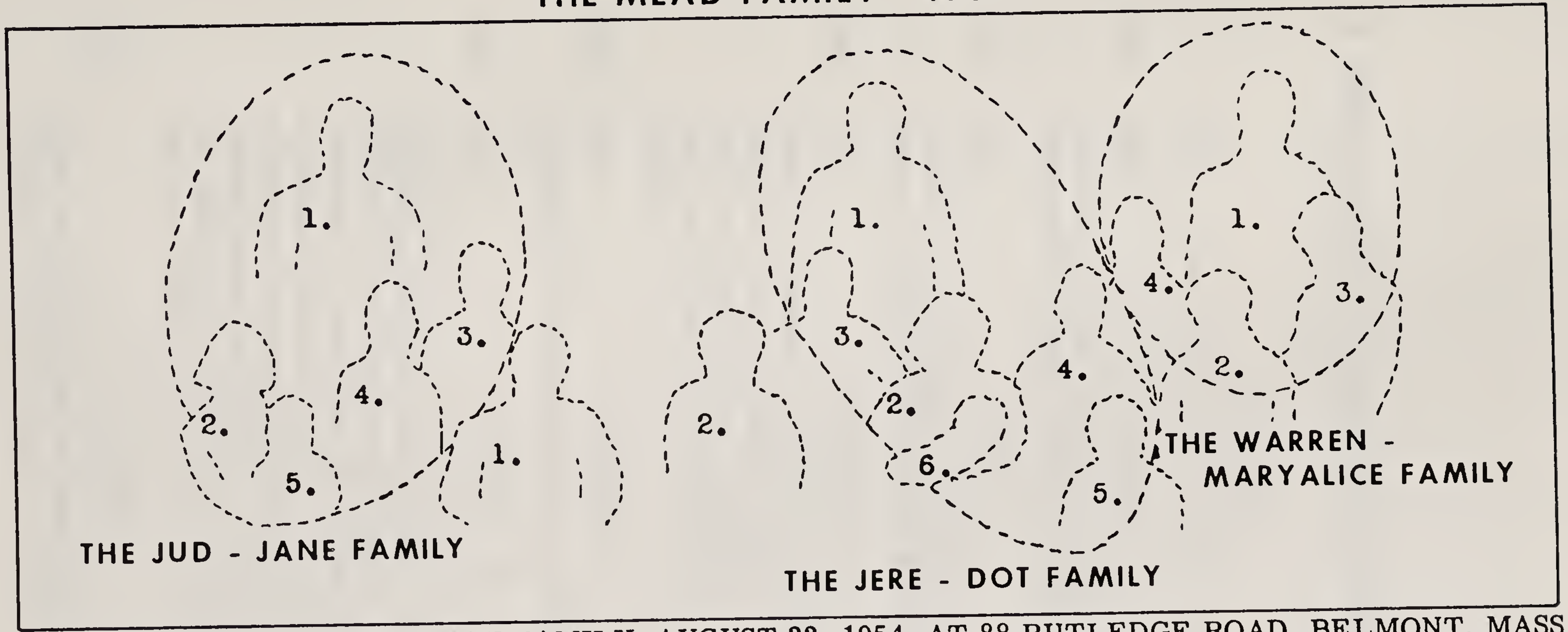
aided and encouraged by his wife
BERTHA TAYLOR MEAD

nudged along by his youngest son
JEREMIAH MEAD

is dedicated to the FAMILY,
past, present and future.

We hope to launch this little book
into orbit on June seventeenth, 1959
in celebration of our Golden Wedding Day.

THE MEAD FAMILY - 1954



THE WARREN J. - BERTHA MAY FAMILY, AUGUST 22, 1954, AT 88 RUTLEDGE ROAD, BELMONT, MASS.

THE JUD - JANE FAMILY
1. Judson; Sept. 16, 1917
2. Jane (Stanley)
3. Judson Taylor; Feb. 18, 1946
4. Thomas Doran; Dec. 31, 1947
5. John Stanley; Dec. 9, 1953

THE JERE - DOT FAMILY
1. Jeremiah; Aug. 30, 1920
2. Dorothea (Perry)
3. Jeremiah Putnam; Mar. 24, 1947
4. Warren Perry; Mar. 28, 1949
5. Andrew Washburn; May 19, 1952
6. Sarah Taylor; June 25, 1954

THE WARREN - MARYALICE FAMILY
1. Warren; Aug. 16, 1912
2. Maryalice (Riley)
3. Kathe Taylor; May 28, 1943
4. Jerud Jonathan; Nov. 15, 1944

1. Warren Judson; Aug. 5, 1883 2. Bertha May (Taylor); Aug. 30, 1883

A BRIEF GUIDE TO HELP THE READER FIND THINGS

LETTER 1 PAGES 1 - 3

Why, where, and by whom these letters were written.

1742 - 1895 LETTER 2 PAGES 4 - 14

Ancestors I knew and knew about. Grandfather and Grandmother Mead. Boyhood visits to their farm.

1880 - 1900 LETTER 3 PAGES 15 - 38

Boyhood in Plymouth. Memories of the Frick House, the Brick House, and the Mead House.

1900 - 1906 LETTER 4 PAGES 39 - 51

Years in Plymouth. Graduate from high school. Teach in country schools. Enter University. Study electrical engineering. Change to geology. First work as geologist in Cobalt-silver District of Canada.

1906 - 1908 LETTER 5 PAGES 52 - 55

Appointed to Assistantship in Geology Department.

1908 - 1915 LETTER 6 PAGES 56 - 79

Two summers on U. S. Geological Survey. Employed by Longyear and Hodge. Marry Bertha May Taylor. Find iron ore at Amasa. Trip to Cuba. Promoted to Assistant Professorship. Work in Arkansas Bauxite District. Employed by ALCOA to explore Arkansas bauxite lands. Father and Mother travel to Europe. Successful exploration for nickel ore. I meet Mr. Thomas Edison. Warren born 1912.

1916 LETTER 7 PAGES 80 - 82

Work with Van Hise on Rowe Mine problem. Go to Panama to study causes of slides.

1917 LETTER 8 PAGES 83 - 86

Judson born September. World War I. The University and me.

1918 - 1919 LETTER 9 PAGES 87 - 95

Examine two important damsites for ALCOA.

1919 - 1921 LETTER 10 PAGES 96 - 107

Jeremiah born August, 1920. Trip to Japan and Manchuria.

1921 - 1925 LETTER 11 PAGES 108 - 117

Build house on Adams Street. Accept retainer as expert witness in Butte mining case. Offered Professorship at University of California.

1925 - 1927 LETTER 12 PAGES 118 - 140

Present paper at National Academy meeting and flop. Receive Ph.D. degree at Wisconsin. Accept Visiting Professorship at University of California. Family drives to Berkeley. Year in California. We return to Madison.

1927 - 1928 LETTER 13 PAGES 141 - 147

Appointed to Colorado River Board, Boulder Dam. Accept position of consulting geologist with Consolidated Mining and Smelting Company of Canada.

LETTER 14 PAGES 148 - 152

Experience as expert witness in two mining lawsuits.

LETTER 15 PAGES 153 - 167

Stories about boys and family during growing-up period, about 1915 to 1931.

1929 - 1932 LETTER 16 PAGES 168 - 180

Dean Sellery appoints me Chairman of Geology Department, but "it didn't work." Jud and I drive to Kimberley. Buy cottage on Lake Mendota. Bertha visits me in Kimberley. We drive home together. Fly to Great Bear Lake. Warren departs for the West.

1932 - 1937 LETTER 17 PAGES 181 - 196

Offered and accept Headship, Geology Department at M.I.T. Judson and Jere enter The Hill School. Move to Cambridge, Massachusetts. Bertha and I go to Panama about leakage at Madden Dam. Accept position, consulting geologist, U. S. Smelting, Refining and Mining Company of Boston. Warren returns from Honolulu, takes job in Milwaukee.

1937 - 1940 LETTER 18 PAGES 197 - 213

New home in Belmont. Jerome subsidence case. Warren and Maryalice married. Hurricane of 1938. Become consultant for Reynolds Metals Company.

1940 - 1941 LETTER 19 PAGES 214 - 218

Have auto accident in Missouri. Employ Mr. Zeglin for Reynolds Mining Corporation.

1942 - 1945 LETTER 20 PAGES 219 - 228

Rent wartime apartment on Pinckney Street. Judson and Jane married. Reynolds research episode. Jeremiah and Dorothea married.

1946 - 1959 LETTER 21 PAGES 229 - 247

Warren leaves Milwaukee. Jere completes Medical School. I acquire asthma. I am fired by Mr. Reynolds. Special Visiting Committee investigates future of Geology Department. I am retired and appointed Lecturer in Geology for five-year period. Really retire in 1954. Rehired by Reynolds Mining Corporation. Go to Yukon Territory for ALCOA. Cortisone controls asthma. Drive West, pick up Bertha in Bloomington and return via Canada. Have internal repairs and two cataract operations.

LETTER 22 PAGES 248 - 252

In conclusion! Brings the Mead family up to date.

Warren Judson Mead,
the writer of these letters.

March 11, 1957

Dear Family,

This may be the first of a series of letters to you. Our youngest son, Jere (Jeremiah Mead, M. D., Associate Professor of Physiology in the Harvard School of Public Health), who lives in this area and drops in to chat with the old folks now and then, has often listened patiently to my tales of the past and many times urged me to write something about the family.

I recall many pleasant conversations with my parents, grandparents, uncles, and aunts about interesting events in their lives, and I regret that it never occurred to me to record any of the things they told me or urge them to do so.

Now I am suddenly aware that I am the oldest Mead left, Grandfather Mead, patriarch of the Mead Family! It is hard to believe, but it's true! What I know about the Mead family history will disappear with me if I don't record it. Perhaps I should at least make a try.

I made a serious attempt at a start of the record last Saturday by dictating to a stenographer for several hours. The transcribed copy was very disappointing. It had the literary charm of a hastily written geological report on an unimportant mining claim, and I was discouraged. But that night, just before, or perhaps just after falling asleep, I dreamed up the idea of writing the story as a series of letters. I like this way much better, as I can scribble away at any time without giving a thought to "unity, coherence, and emphasis," so thoroughly drilled into me in English I, fifty-five years ago. I am typing the first draft myself, on a modern electric typewriter, rented today. It looks like quite a job but it should be fun. I have time on my hands and an increased interest in the past that comes naturally with the years. An old man isn't greatly concerned with the future because there is so little of it. But there is a lot of past.

The Mead Home
at 88 Rutledge Road,
Belmont, Massachusetts.

These letters will be addressed to "Dear Family" and are, I sincerely hope, to be read only by the family. I realize I am writing not only to the present generations of the family but to future generations as well. If the paper lasts and the ink doesn't fade, this series of letters could become historic documents. It behooves me to keep the record straight.

As a matter of record, I should tell you who it is that has the presumption to start this ball rolling. I am Warren Judson Mead, a fairly goodnatured, bald-headed old man in his seventy-fourth year. I am in reasonably good health (except for chronic bronchial asthma, nicely controlled by cortisone), and reasonably well preserved, although a little patched up internally. I have excellent hearing in both ears, good sight in one eye (the other eye had a cataract operation last November). I am of sound mind - at least my patient wife Bertha has not yet petitioned to have a guardian appointed. My memory is excellent, although it has shifted a bit, as is usual in old people. I remember the distant past better than I recall recent events.

We live at 88 Rutledge Road in Belmont, a pleasant residential suburb of Boston, in a fairly large, two-story frame house with red brick ends. Except for the brick ends, the house is white. There are plenty of rooms and a wonderful, livable basement, where I spend much of my time. Here I have a very good, well-equipped workshop, and until I temporarily lost the use of one eye I was a pretty good mechanic and instrument maker. I made a series of precision research instruments for Doctor Jere. I have a good, straight-rail billiard table where Dr. Vannevar Bush frequently comes to play billiards with me. On the top of a row of seven steel filing cabinets are perhaps 200 African Violets, growing under fluorescent lights and most of them in bloom.

Besides myself (but not living in the basement), is my wife, Bertha May, a loveable and most remarkable woman. Remarkable because she has put up with my insults, tantrums, and idiosyncracies for nearly fifty years, which means she is a wonderful wife.

And besides us two elderly people in this big house, there is a third, a wonderful person from Newfoundland who has cooked our meals, kept us spick and span, and added immensely to our happiness and contentment for the past eleven years, Irene Moores. The grandchildren always inquire "Where's Irene?" before they ask for us.

What do I do when I'm not writing letters? A little professional consulting work from my desk and easy chair and over the long-distance telephone. I work in my shop, play billiards, attend to the African Violets. In the proper seasons I raise tomatoes, strawberries and vegetables in the garden.

How do we live without a job? Quite comfortably, on life insurance annuities, a modest pension from the Massachusetts Institute of Technology, very modest royalties from patents and something still coming in as consulting fees.

We have two cars in the garage. Bertha drives one of them. I drive as well as ever in the daytime but do not attempt to drive at night.

Now you have some idea as to where these letters are coming from. This first one is only an introduction. I wonder how long I will stay with this job.

Goodbye for now,

W. J. M.

P. S. Please keep these letters within the family. They are not intended for outside circulation.

W. J. M.

March 15, 1957

Dear Family,

This is a rather cloudy day but it has a promise of spring. As my Grandparents used to say, guess I'll "come through to grass" again this year.

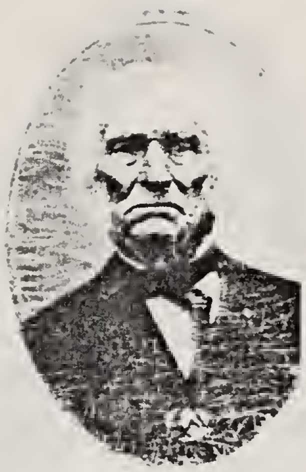
In this account of the Mead family it seems appropriate to start as far back as a reliable record can be traced and to move toward the present from there.

It has been comparatively easy to trace the Mead line back through seven generations, beginning with my own as number one. In this I have used notes and newspaper clippings left by my Mother, letters from my oldest living relative, Aunt Mary Robertson, my Father's half-sister. Much excellent material including photographs of grave markers was supplied by Roger McIntyre, a Milwaukee attorney, a grandson of my Father's half-sister Aunt Amy Eastman. I also have been aided by my sisters, Mrs. Arlisle Wiesender of Berlin, Wisconsin and Mrs. Jessie Rose of Madison, Wisconsin. I have relied much on my own memory, including information I had from my Grandparents years ago.

As I have just remarked - It has been a comparatively easy task to trace the Mead line back through seven generations to my Great-great-great-grandfather Lewis H. Mead, who was born in 1742 and died in 1822. But Lewis H. Mead has proved to be a very secretive ancestor. We know that he lived part of his life in the state of New York and part of it in Milford, Pennsylvania. He had a brother, Jacob, who lived in Putnam County, New York.

Lewis H. had a wife whose first name was Levina but we don't know her family name. Lewis and Levina had five children, Lewis, Sarah, Ezekiel, Christian and Joseph. (We do not know whether Christian was a son or a daughter).

But we don't know where Lewis H. was born, where he died, where he was buried or anything about his parents. No grave or grave-marker has been found but a great-grandson,



Jeremiah Mead, 1788 - 1879,
my Great-great-grandfather.

Rogers Dupont Mead had a memorial stone erected in the Pleasant Valley cemetery in Tioga County, New York with an inscription which says that Lewis H. was born in Wales. However there are several reasons for doubting this, particularly his statement at the time of his enlistment in the Colonial Army, that he was born in New England. The Report of the New York State Historian, Colonial Series, Volume II, page 564 discloses that Lewis H. enlisted on April 19, 1760 at the age of 18 in Captain Jacobus Swartout's Company. He was 5 feet 8 inches tall, farmer by trade, light hair and pale complexion, and was born in New England.

Lewis H. presents a tough genealogical problem on which many able investigators have worked for years and the search still goes on because a true genealogist never quits.

Lewis Jr., presumably the oldest son of Lewis H. and Levina, was born in Phillipstown, Putnam County, New York in 1764. He served in the Revolutionary War in 1781 in Captain Livingstone's Company of Colonel Weisenfel's regiment. In 1784 he married Sarah Brown. He died on January 15, 1842.

Lewis Jr. and Sarah had four sons and four daughters. The second son, Jeremiah was born on August 15, 1788 and died on March 10, 1879. Great-great-grandfather Jeremiah was buried in Lyndon Cemetery, Town of Lyndon, Sheboygan County, Wisconsin. This cemetery is the burying-place of many Meads and their relatives through several generations.

A published "Commemorative Biographical Record of Dutchess County, New York" records that Jeremiah was married to Sarah Barrett and that they had seven children: Major, Milan, Morris, Mahala, Moses, Minerva, and Marilla. A wife named Charlotte Sprague lies at his side in Lyndon Cemetery, so he evidently married a second time.

Major, the first on the list of Jeremiah's children and for that reason presumed to be the oldest, was born in Putnam County, New York, in 1810. My father, also named Major, didn't like the name and said he thought his grandfather had been named after the dog.

Putnam County was a sort of way station on the westward migration of the Meads and also of most of the families with which they intermarried - Robinson, Peck, and Bates. I have heard "Put County" mentioned hundreds of times by my relatives back in Wisconsin. Father and Mother made a pilgrimage back to Put County when I was a boy, and visited the grave of their common great-great-grandfather, Isaiah Robinson.

Major Mead married Betsy Robinson in 1828. They had six children: Clark, Abel, Smith, Phoebe, Jennie, and Millie. In 1850, twelve years after their marriage, they were overtaken by the urge of "Westward ho!". Major and the entire family, including his father Jeremiah and probably a few uncles and aunts, boarded a river boat at Poughkeepsie and proceeded to Albany; from there they traveled on the Erie Canal to Buffalo. Try to imagine that canal trip, at the pace of a walking horse, with all the kids, looking ahead to a home in a new, wild country. At Buffalo they boarded a lake steamer (I have always wondered if they saw Niagara Falls) and traveled all the way around through the Great Lakes, landing at Sheboygan, Wisconsin, on June 9, 1850. That must have been a wonderful trip, the big adventure in the Mead family. I don't know how many of the six children had been born in Putnam County. Probably all of them, as it was twelve years after Major and Betsy's marriage. So far as I know, one of them may have been born on the Erie Canal; there was plenty of time.

From Sheboygan they traveled westward to Batavia in the Town of Sherman. Later they moved to a spot called Onion River in the Town of Lyndon, a few miles from the present village of Waldo. There they acquired a farm of about five hundred acres. This became the Mead farm, the boyhood home of my father, another Major Mead.

My great-grandmother Betsy, the good wife of Major, was born in Kent in Putnam County, New York, in 1811. She died on October 8, 1903, and was buried in Lyndon Cemetery. I was twenty years old when she died, and have clear and pleasant memories of a remarkable old lady. She was a dignified, pleasant little woman, always calm and composed, with an immense goitre beneath her chin, which she kept neatly covered with a lace neckpiece, which suggested the appearance of a pouter pigeon. In her later years the goitre disappeared after a fall on the stairs. She had fine brown eyes and dark brown hair, which never showed gray. It may have been dyed, or perhaps she wore a wig, but I believe it was natural. Her

Betsy Robinson Mead, 1811 - 1903,
Wife of Great-grandfather Major.

voice was surprisingly deep and pleasant and her diction clear and crisp, and she appeared very wise.

The Robinsons, Betsy's family, closely paralleled the Mead family, both geographically and otherwise. Isaiah Robinson, grandfather of Betsy, had moved with his family from Cape Cod, Massachusetts, to Carmel, Putnam County, New York, at an early date. Isaiah married Amy Chapel and they had eight children: Peter, Zelotas, Isaiah, Ebenezer, Noah, Andrew, Chapel, and Lydia.

Peter Robinson, born March 8, 1761, died May 21, 1849. He was a soldier in the Revolution and was at West Point at the time of Arnold's treason. During the latter part of his life he received a pension from the government. The principal witness supporting his application was Enoch Crosby, the original of "Harvey Birch," who is the hero of Cooper's Spy.

Peter Robinson married Phebe Haight and they had nine children: Huldah, James, Nathaniel, Meliza, Ira, Carle, Lydia, Betsy, and Amy.

Peter and his brother Andrew, sons of Isaiah, are the boys of importance to the Mead family. Peter's daughter Betsy married Major Mead and was my father's grandmother, and Andrew's grandson, Elisha was my mother's father.

On two occasions, and two generations apart, a Mead lad named Major married a pretty lass named Robinson, and I am very glad they did!

In the list of Jeremiah's children, on an earlier page, you will note that Major had a brother named Milan. Milan had a grandson, Samuel, who also played an important part in my early life. He was the leading physician of Plymouth for many years and ushered me, my sisters and my cousins into this world. He was a splendid physician and a most interesting person. I will have more to tell you about him later.

To return to my great-grandfather Major, and his wife

Abel Mead, 1829 - 1859, my grandfather.

Betsy, and their six children, who have now arrived safely in Wisconsin. Their second son Abel, (born September 7, 1829), married Permelia A. Peck on December 9, 1854. They had one son, Major - my father - and one daughter, Elizabeth, who died at the age of twenty-two. Abel died of tuberculosis ("consumption" in those days), after working too strenuously on a stone wall on the farm. (The many glacial boulders had to be cleared from the fields and used in some manner). This was in 1859 when Abel was only thirty years old. My father was then four. Three years later, on January 25, 1862, my grandmother Permelia married Abel's younger brother, Clark Robinson Mead. Clark was always Grandpa Mead to me.

Before telling you more about Grandfather Clark and the farm at Onion River, I should tell you something of Grandmother Permelia. She was an outstandingly able and personable woman. Her early married life was lived in a log cabin which was later replaced by a small frame house and still later by a large frame farmhouse. I have a faint recollection of the building of the second house. She was a capable, industrious farmer's wife. She put up a limitless supply of canned vegetables and fruit, jellies, jams, preserves and pickles, at a time when none of these things could be purchased at a store. She also supervised the making of the soap. I recall the raised wooden vat in the back yard, where the wood ashes were leached for lye, and the huge iron kettle that hung nearby for making the soap and for boiling water when the hogs were butchered.

Grandmother was born Permelia H. Peck, in Rensselaer County, New York, on December 3, 1834. She died in Plymouth, Wisconsin, on September 16, 1912, and lies in the Lyndon Cemetery. She went to school in Sheboygan, attended Berea College in Berea, Kentucky and was teaching school in Sheboygan when Grandfather Abel married her.

Grandfather Clark Mead was a fairly tall, thin individual, always with a beard and no moustache. The beard changed

Grandfather Clark Mead,
Grandmother Permelia,
about the time of
their marriage.

from dark and bushy to sparse and gray, with the years. He was a genial, pleasant grandfather, and as a small boy I greatly enjoyed our fairly frequent visits to his farm, seven miles (an immense distance), from my home in Plymouth. Grandfather was a pious man, a deacon in the Baptist Church, who always "gave thanks" before meals and conducted the family prayers.

Grandfather Clark taught me my very first lesson in surveying, which may have had something to do with my later interest in engineering. During one of my boyhood visits to the farm, Grandfather announced at the supper table that he was going to lay out a drainage ditch in the morning and would like my assistance. After the usual early breakfast he assembled the equipment, which consisted of a tall stool, a dishpan and a large wooden bucket borrowed from the kitchen, a piece of pine board about eight inches long and two or three inches wide, a nail and a screw-eye, and a long, straight stick. He filled the bucket at the pump, and we carried this strange surveying equipment to a level place in front of the granary.

Grandfather placed the stool some fifty feet from the granary door, placed the big dishpan on the stool, and filled it with water from the bucket. Then he drove the nail part way into the flat side of the board near one end and screwed the screw-eye a little way into the flat side of the board near the other end and floated the board on the water in the dishpan. He produced a piece of blue chalk, such as carpenters use, from his pocket, gave it to me and asked me to stand by the door of the granary. Next he squatted and squinted through the screw-eye at the nail head and had me make a mark on the door at his line of sight. Then he turned the floating peep-sight end-for-end and, squinting from the nail head through the screw-eye directed me to make a second mark on the door on this second line of sight. He then took the chalk and made a mark midway between the first two. By adjusting the screw-eye, he fixed his floating sight so that the centre mark on the door was in line with the sight from nail to screw-eye and from screw-eye to nail. Grandfather now had a home made surveyor's level, quite adequate for his purpose and made from things at hand.

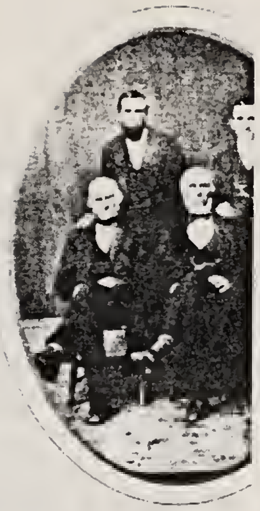
This was a lesson in ingenuity and resourcefulness that I never forgot. Grandfather said "Son" - no, I believe he called me "Bub" - "you can do almost anything with what you've got, if you just use your head". I remembered this lesson many years later when I made a perfectly good solar compass out of tin can covers and a piece of wire, far north on the Arctic Circle in Canada, where there were no instrument shops.

After the lesson in building and adjusting a homemade level, Grandfather poured the water back into the bucket and proceeded to the location of the proposed ditch. The stool, dishpan, and floating sight were set up. I held the stick vertically, one end on the ground close to the stool, and Grandfather made chalk marks on all sides of the stick at the height of the level sights. I was then directed to a place, perhaps a hundred feet away and at about the same level, on the gently sloping surface of the pasture. Grandfather, squatting and squinting and waving first one hand and then the other, waved me to a spot where the mark on the stick was on his line of sight. He then lugged his equipment to the spot he had waved me to and set it up as before. After making a second mark on my stick, eight or ten inches above the first, he directed me down the slope at right angles to the level line we had established, until the upper mark on the stick was on his line of sight. He produced a stake from a bag he had been carrying on a shoulder strap and drove it into the ground to mark the spot. He then moved the stool to a point above the stake and sent me ahead another hundred feet and repeated the routine. In this way a line of stakes was established having the proper slope for the ditch. Simple enough, if you know how!

On a rainy morning on one of my visits to Grandfather's farm he asked me if I wanted to help him boil the clock. He grinned when he asked the question and I looked surprised. He laid out papers on the kitchen table, took the Seth Thomas clock down from the shelf and proceeded to take the clock apart - a thing I secretly wanted to do every time I looked at a clock. Grandfather removed the pendulum, the hands and the face and then removed some screws and took out the works.

He then boiled a large kettle of water and when the water was boiling briskly he dropped in the clock works. He explained that this was to remove the old oil and grease and

Four generations of Meads;
Standing, Grandfather Clark, Father Major;
Seated, Great-great-grandfather Jeremiah,
Great-grandfather Major.



the dust and dirt. After the works had been boiled for at least half an hour he removed them, shook out the water and immediately put them in the hot baking oven of the stove. He said this was to dry out the water before it could cause rusting. After baking the clock for thirty minutes or more he removed it from the oven. After the works had cooled he got his bottle of clock oil and a turkey feather. He stripped the feather, leaving only a tiny brush at the end. This he used to apply oil to the bearings. Then the clock was re-assembled and returned to the shelf to run for another year or more.

The Onion River flowed through the farm and was one of the features most attractive to a boy. It was a nice tame little river, without any dangerous deep places. It had ponds where yellow and white waterlilies grew, and marshy places for cattails and black birds. It was a wonderful place to wade, and small fish abounded. There were shiners, chubs, redhorse, suckers and, best of all, bullheads.

These are just the boy's names for the fish. The bullheads were very good to eat and welcome in Grandmother's kitchen. They were a black, smooth-skinned fish without scales and eight or nine inches long, the big ones. They had a large head with curious worm-like barbles around the mouth and carried a sharp, pointed dagger concealed in their gills so that an inexperienced fisherman, grasping the fish in the usual manner to extract a hook, was painfully stabbed in the hand by a squirm of the fish.

My Uncle Perly, my father's youngest step-brother, was a big boy on the farm when I was a small boy. We played and fished together, and he taught me a lot. One night, when the grandparents had gone to mid-week prayer meeting - which they never missed, because it was a social as well as a religious event - Uncle Perly brought a goose wing from the kitchen. (Probably his mother's favorite crumb brush). He took the two largest feathers, from which he cut lengths of quill about two inches long. He cleaned these out and had two open-ended cylinders. He fashioned a couple of sticks that would fit loosely into the quills and got a potato which he cut into slices about an eighth of an inch thick. By shoving each end of a quill through a potato slice, the quill was "loaded." When a stick was thrust into the loaded quill, it pushed a potato plug forward, compressing the trapped air and causing the other plug to pop out with a very satisfactory report.

Each armed with a quill popgun and potato slices, we had a wonderful battle from opposite ends of the big fireplace. Grandmother didn't like the condition of the rug and floor at all when she returned. We were disarmed, and the popguns went into the fire. Last week, when our grandson Warnie paid us an overnight visit, I happened to recall the potato popgun. Not having any quills, I made an excellent substitute with some thin-walled aluminum tubing and took him home the next day very pleased with his new weapon. There were later repercussions over the telephone which I expected.

On Christmas and Thanksgiving day, the Meads and their relatives the Eastmans, with all the grandchildren, drove to the old home in Onion River. The program was always the same: a lot of conversation when we arrived, a visit to the granary where everyone was weighed and the weights recorded on the wall. A wonderful dinner, the main event of the day. After dinner hymn-singing around the organ in the parlor, usually with a solo by my father who had a really good voice. He had his own versions for some of the songs and amused the children with his insistence that it was "Locked in the Stable with the Sheep" rather than "Rocked in the Cradle of the Deep". There were walks outside to "settle the dinner" and a few naps, here and there. And at last the preparations and finally the start of the long seven-mile drive back to Plymouth at the end of the day.

It must be admitted that the traditional visit on Christmas, involving the leaving of all the Christmas toys for the day was not entered into with enthusiasm by the children; but there was the exchange of presents at Grandfather's after dinner, and always a five-dollar gold piece under the dinner plate for each of the grownups and a big silver dollar for each grandchild to be discovered just after the "blessing." I remember that once, after Grandfather had been thanked for his generosity, Grandmother sweetly said: "Remember, there is an advocate of the father," and after that she was always thanked too.

The Christmas trips were sometimes made in heavy snow and were quite an adventure. Uncle Charlie Eastman came with a team of horses and a big bobsled, from the farm. This was a wagon box on four runners that could rock or bob to conform to the ups and downs of the road. The box was filled with clean, golden, oat straw, and there were real buffalo robes for covers. All available "soap stones" and flat irons had been heated for foot-warmers, and we drove through unplowed country roads with the snow higher than the fences in places; in fact, sometimes it was difficult to keep on the highway. On one trip the entire outfit was overturned in a snowbank, but Uncle Charlie held onto the team and we eventually proceeded on our way, with a lot of extra snow aboard.

In 1894 Grandfather sold the farm. He and Grandmother moved to Plymouth and bought a home on the opposite side of the block in which we lived. So the "Grandfather's farm" phase of our lives came to an end, as all good things eventually do.

Grandfather's new home in Plymouth was only a few minutes away via a foot path through the unfenced back yards of the neighborly neighbors. One Sunday morning, when father and I were working in the yard and had just tackled a patch of high grass and weeds, he asked me to run through to Grandfather's place and borrow his scythe. I knew where the scythe hung - in the front part of the barn, back of the surrey - and while I was getting it off the hook, I heard Grandfather in the stable putting the harness on the horse in preparation for taking Grandmother to church.

Something evidently had gone wrong with his freshly shined go-to-meeting boots, because I heard him very profanely deliver some quite uncomplimentary remarks to the horse, reflecting on the ancestry of the animal and exclaiming that it could deposit manure farther up in a stall than any ---- ---- horse he had ever known. I peeked through a crack to verify my identification of Grandfather, (Father was a lawyer and would insist on factual evidence), got quietly out of the barn, and went home with the scythe and filled with astonishment.

This was an experience much too big to be kept a secret from Dad. Besides, I had been scolded for mild profanity, whereas Grandfather had been held up as an example of a man who never swore. So I asked my father if he had ever heard Grandfather swear or cuss. Father replied with emphasis that he and no other man living had ever heard his father swear. I told him that I had but this he seriously doubted. I told him that not only did Grandfather swear but that he was an expert at it. Father asked, "What did your grandfather say?" I answered that I could not repeat what he said. Father said, "You can repeat anything your grandfather ever said. Tell me what he said, verbatim." So I told him. He sat down on a bench and asked for a repeat, which I gave him. Then came the expected cross-examination from Attorney Mead. How could I be sure it was Grandfather? But I had the answer to that one. The questioning was concluded when Father said: "Son, I wouldn't have missed this for the world. You have added immensely to my understanding and appreciation of your grandfather. I know now that we belong to the same fraternity."

After moving to Plymouth Grandfather didn't really retire. He bought and sold real estate and cattle. He drove about the county with a "horse and buggy" and purchased cattle from the farmers to be shipped to the packing houses in Chicago. Frequently he took me with him. I learned a lot about the country and the farmers, and I enjoyed it.

Grandfather Clark Mead died on November fourth, 1907 at his home in Plymouth, and was buried in Lyndon Cemetery.

March 19, 1957

Dear Family,

It may not interest you, but the weather has not changed at all since I started the first of these letters on the eleventh of the month. A year ago at this time we were rather well buried in snow. The St. Patrick's Day Parade, so important in this largely Irish city, had to be postponed twice for snow. This would appear to have little to do with family history; however, Great-grandfather Noah Robinson married Hulda Kelly, and I'll bet she was Irish!

But now to get back to the story of the Mead family. At the close of the last letter, Grandfather Mead had left the farm, moved to Plymouth, lived out his remaining years there, and was finally laid to rest in Lyndon Cemetery. Grandmother was still living in Plymouth. She died in September, 1912, the year my oldest boy, Warren, was born, so none of our children ever saw my grandmother or grandfather Mead.

Grandfather Clark Mead and his wife Permelia had four children: Georganna, Amy, Mary, and Perly. Of these I knew Aunt Amy, Aunt Mary, and Uncle Perly, of whom I have already told you.

Aunt Amy became the wife of Charles D. Eastman, a young farmer whose land lay a short distance south of Plymouth Between Uncle Charlie's farm and the city limits of Plymouth was the fine farm of his brother, Enos.

Uncle Charlie's farm was within walking distance of our home in Plymouth, and it provided just as much fun for a small boy as did the farm at Onion River. The Eastman farms also had a river, the Mullet, which flowed through the centre of Plymouth on its southward course. There was a mill pond, with good bullhead fishing and frog-leg hunting, springs and creeks to dam, and wooded areas to explore and almost get lost in. Almost everything a boy and his friends could ask for.

Uncle Charlie operated a cheese factory quite near the farmhouse, and I remember how good it was to chew the fresh yellow curd for both the taste and the squeak. Threshing day on the farm was a thrilling occasion, with the steam thresher engine and the gang of cooperative neighboring farmers who moved from farm to farm to help their neighbors thresh the grain. Then there was the big dinner for a lot of hungry men who "ate like threshers."

The Charles Eastmans had two daughters, cousins Miriam and Marjorie. Miriam married Louis Arnold, whom I had known at the University, a very able and successful contractor on big jobs, largely road building. They still live in Eau Claire, Wisconsin, where they have raised a fine, large family and are already counting their grandchildren. Marjorie married Frank McIntyre, an attorney, who died not long ago. She lives with her son Roger in Milwaukee. Roger is the only relative I know of who is interested in genealogy. He has supplied me with a lot of excellent family data.

Uncle Charles Eastman, being a dairy farmer and a producer of cheese, was interested in the construction of the first Plymouth cold-storage plant, for the storage of cheese. In the late 1890's he left farming to manage the plant and later took part in the organization of the Plymouth Exchange Bank and became its president. The bank went under in the great financial bust of 1929. This was a lethal blow to Uncle Charlie. He and Aunt Amy moved to Eau Claire, where he died in 1944. Aunt Amy continued to live there with her daughter Miriam, and died there in 1949.

Aunt Mary Mead married a young dentist of Scotch extraction, from Australia. His name was R. W. Robertson, always Uncle Will to us. Their wedding at Grandfather Mead's home in Plymouth, on June 30, 1897, was a well-remembered event. Uncle Will practiced his profession in Plymouth for many years. He finally retired from dentistry and became manager of a foundry and machinery company which had developed from the Bade Foundry. They made plows and various other items for the farms, the most important being feed cutters for cutting up ensilage. The town quipster (and druggist), Carl Corbett, quipped, "Your Uncle Will didn't change his profession much. He used to fix feed-cutters; now he makes 'em."

Uncle Will died about 1930. He and Aunt Mary had two children: Clark, now a prominent and very successful attorney in Milwaukee, and Elizabeth, who now lives with her mother in Plymouth. Clark was born on January first, 1900. There were endless arguments, at times quite heated, involving father, grandfather, uncles, and anyone else handy, as to whether or not Clark was born on the first day of this century or the first day of the last year of the previous century. So far as I know they never settled the question. Father insisted it was the first day of the century, and of course I thought he was right.

My father, Major Mead, was born on the Mead farm at Onion River on June 26, 1858. He grew up as a farmer boy and had the usual adventures. He said the greatest of them was when he fell through the thatch roof of the pig barn, landing among the swine, from which he was fortunately rescued by the hired man, after a bit of mauling. Mauling by the pigs, I mean. This may have been a factor in his decision not to be a farmer.

On one visit to the farm he took me up in the barn and showed me a lead-pencil inscription, deeply penciled into the flat side of a beam: "On and after this day (I don't recall the date) my name will be Major C Mead". This was signed "Major C Mead." He just wanted a middle initial and selected the letter C, with no period and no name attached; and thereafter he was always known as Major C Mead, and his signature was always M. C Mead. The name Major bothered and embarrassed him, as new acquaintances invariably thought it was a military title.

Father never had any enthusiasm for farming. He faithfully attended country school; when he finished that, he taught in the same kind of a one-room school that he had attended. I know something about the one-room country school, as I also taught in country schools for two years after I finished high school. Father did it in a different sequence: he went to country school, taught in country school, taught in a ward school in Sheboygan, and then went to High School. This matter of attending country school and teaching in country school was long before the day of school buses and "no school days" whenever it rained or whenever there was an inch of snow on the ground. You trudged, walked, waded, or floundered the miles to school, come rain, snow, or high water.

After his school teaching Father attended the Plymouth High School, where he graduated with the first class to finish in that school, in 1879. (I was graduated from the same school in 1900, twenty-one years later.) When Father went to Plymouth High, the principal was Mr. Warren Judson Briar, and Father held him in such high regard that I was given the same name. I met Mr. Briar and his wife in Berkeley, California in 1926. He was a fine old gentleman, whose name I was proud to share.

Father was twenty years old when he graduated from high school. In the class picture he is a solemn, mature-appearing man with a moustache, and could pass for a univer-

First class to graduate from
Plymouth High School, 1897;
Standing at left end,
Major C Mead;
at extreme right,
Charles D. Eastman;
Seated in centre the Principal,
Warren Judson Briar.

sity graduate.

He promptly entered the Law School at the University of Wisconsin. There he belonged to the same boarding club as Bob La Folette, later Governor of Wisconsin and United States Senator. A law student named George Comstock was in the same club and later became the well-known Professor of Astronomy at Wisconsin and a fellow professor with me.

Major C Mead was graduated as a lawyer and admitted to the bar in 1881. Today the same accomplishment would probably take eight years. That same year he married the girl he had had his eye on for some time. Like his Grandfather Major, he married a Robinson girl: Rose Anna, a grandniece of Major's wife Betsy. The young couple went to Wausau, Wisconsin, where father entered into a partnership arrangement to practice law with a University classmate and roommate, Louis Pradt. The arrangement was short-lived; probably the young bride and groom became homesick for Sheboygan County. At any rate they left Wausau, went to Plymouth, and rented a little house and a law office, where Dad "hung up his shingle" and started the practice of law. He was a lawyer in Plymouth until he died, in 1925.

Father was an excellent lawyer and could have succeeded in a bigger way in any large city, but he deliberately chose to live his life in a small town and, as he said, "be a big frog in a small pond" or was it "a big toad in a small puddle"? At any rate he was just that. I realized how well the idea had paid off when I saw the throng of genuine friends from all over the County who came to his funeral. Father had led a truly happy and satisfactory life, with no regrets to cloud his last years.

He was always busy, and tried to settle out of court more cases than he took to trial. In court Dad was a good, fighting trial lawyer. He said the best way to get a client was to lick him in a lawsuit. When there was an occurrence in the county that threatened to breed a lawsuit, he would artfully avoid contact with the side he thought was weak, hoping that the man with the better case would see him first. This stratagem worked many times.

Father was always a student, and his briefs were scholarly. He was greatly pleased when one of his Supreme Court briefs was incorporated in a text book of Cases by one of the law professors, as happened several times. One of his most famous cases - at least locally - and one I well remember was the "horse slashing case." Over a period of a year or more, fine horses in or near Plymouth were brutally mutilated by slashing back both sides of the mouth and cutting long slashes in the neck and chest, not so as to kill the horse but enough to badly injure the animal. Father was public prosecutor, and the police arrested a local butcher's helper, a man well known in Plymouth. Though no conviction was secured, it was a thrilling case and the slashings ceased.

Father was City Attorney for many years and took a great interest in what went on in City Hall. In 1888 he was elected to the State Senate, where he served for four years. I remember going with Mother to see Dad while the legislature was in session and being left by myself in a hotel room while they attended a reception. Dad had the title of Senator for the rest of his life.

This was in the days of railroad passes, and constituent would call at any hour of any day in the week trying, through his influence, to get a pass for a trip on the railroad. Father became very tired of this phase of politics.

For years he lived in hope of an appointment to a judicial post, but this wish was never fulfilled.

In 1902 (the year I matriculated at the University of Wisconsin), he was greatly pleased when his old friend and fellow law student, Governor Bob La Follette, appointed him to the University's Board of Regents. He served on the Board fo six years, part of the time as President of the Board, and in that capacity signed both my bachelor's and master's diplomas and also made my sister Arlisle's degree official.

I was an undergraduate and graduate student at the University throughout Father's term on the Board of Regents. I remember one incident that provided a good laugh. Father wa to attend a Regent-Faculty reception at the home of President Van Hise. As an instructor in geology I also was invited. I went down to the Park Hotel to join Father. As I walked dow the corridor to his room the door was open, and there was a sight to remember. Father stood facing the mirror of the dressing table. Standing close behind him, on a chair, was the short, chunky hotel porter, wearing a huge handlebar moustache and a visored cap. He was leaning with both arms on Father's shoulders and peering around Father's head into the mirror. I finally realized that Tony was trying to tie Father's necktie, a white tie, with not too clean and very large hands. Dad sensed my presence, or perhaps I uttered an exclamation - at least he inquired in desperation as to my ability to tie a "string tie." I said I could, and did so to his great relief. He said "Thank God," and collapsed into a chair. Mother had provided him with a whole box of white ties, and there was only one left that was white enough to wear.

Father, a master with words and ideas and a brilliant lawyer, was devoid of any understanding of mechanical things or skill with his hands. He couldn't use a hammer or other tools, couldn't slice a loaf of bread, and never to my knowledge ever tied his own necktie. When he was away from Mother he always used ready-tied "four-in-hands" or bow ties.

He also had no sense of location, and being aware of this, he usually made mental or penciled notes to aid him in returning to the same place. Once when he came to spend the night at our home in Madison, I picked him up at the station and took him to within three blocks of the house on the streetcar. On alighting from the car he looked about for land marks, as was his habit, and audibly made a note of Jordan's Meat Market. Next morning, when we started for town, he preceded me down the front steps and started to walk in the wrong direction. I called to him and suggested the opposite direction, and he said he always liked a change. We retraced our route of the previous afternoon, and at the street car he again noted and remembered Jordan's Market and remarked that they evidently had a chain of markets!

Once on a similar visit, he went to his room for a Sunday afternoon nap. That night, when I took him to his room to retire (he wouldn't trust himself to find the right room), he said in a low voice, "Son, don't tell Bertha, but there aren't any covers on the bed. I used my overcoat this afternoon when I napped. Maybe you can find me a blanket without embarrassing Bertha." The bed, seldom used, had a sheet over the counterpane, and to Dad a sheet meant that the mattress was just beneath the sheet. He was astonished and apologetic when I turned back the bed for him, but he would have slept under his overcoat that night if I hadn't fixed the bed for him. He really wasn't dumb, just helpless.

Father was ever the student. Each winter he would lay out a course of reading (he couldn't resist a salesman of fine books) and carry it through. One winter it was Rome, and he devoured Gibbon's Decline and Fall of the Roman Empire and much else on the subject. Another year it was Napoleon, and when at long last he got to France he missed nothing that had to do with Napoleon. One winter it was Shakespeare, and he almost became a Shakespearian actor.

He was a good and wise dad. When I was in high school, the billiard and pool room in the rear of Charlie Lahl's barber shop was strictly out of bounds for most boys. They did, however, sneak in through the side door and play. One of the barbers, Billie Cassiebaum, who was also the star pitcher on the Plymouth baseball team, kept an eye out for fathers and warned any boy if his dad entered the shop. Billie would whisper loudly: "Your dad's here! Scram!" and the side door would slam.

One day Dad said, "Son, you ought to learn to play billiards; I never had a chance. You go into Charlie Lahl's and get Billie to show you how. Put it on my ticket if you don't have the change." When Billie warned, "Warren, your dad just came in", I proudly said "Fine, ask him to come out and play," and sometimes he did.

Dad gave me the same permission to bowl, and the bowling alley was entered through Jake Boop's saloon! As to smoking, he said he hoped I wouldn't smoke before I was twenty-one; he hadn't, but if I wanted to smoke, not to sneak off behind the barn and smoke corn silk or clover tops but to come to him and he would start me right. I didn't smoke till I was twenty-one. Billiards, pool, smoking, and bowling lost much of their attractiveness because they weren't forbidden. Dad was playing it smart.

As to girls and the birds and the bees - one evening on a stroll he remarked that I was a big boy now and probably attracted by the opposite sex. He hoped and thought I would have enough sense to keep out of trouble, but if I ever thought I might be in trouble of any kind to come right to him, because "your dad is the best damn lawyer in Sheboygan County!" I never had to ask for his services.

Mention of Charlie Lahl's barber shop brings back a host of boyhood memories. There were always several old codgers swapping yarns in front of the shop. Most of the men on the street came every day or every second day for a fifteen-cent shave. Once when I was a University faculty member, home on a visit, one of the oldsters named Mr. Briggs (Father always referred to him as "Old Braggs") recognized me and said, "Warren, what are you doing now-a-days, still at the University?" I told him I was living in Madison. He remarked that I must be pretty near through the University, and when I explained that I was teaching at the University, he said I was pretty lucky to have my father on the Board of Regents, so he could get me a good job. Most people didn't know that anyone ever got a job except through "pull" or "influence."

I am sure, Dear Family, that you must be impressed and perhaps disgusted with the complete lack of organization of this dissertation, or more likely you have already left it in disgust. In this letter I started telling you about my father and ended up standing in front of a barber shop. So let's make a fresh start by going home to Mother.

Father had picked a wonderful wife and a superlative mother for his children. As I said, they came back to Sheboygan County after a brief try at living in Wausau and rented a little house on Main Street in Plymouth. (The main street in Plymouth is Mill Street. Main Street is one block north.) Here I was born, in 1883, three years after they were married. There was another son born earlier but he did not survive being born.

I, of course do not remember living in the Main Street house, as we moved from there to the "Frick house" while I was a small baby. But the house stood there for many years and I saw it many times. I do remember Mother's stories of a young wife occasionally left alone in the evening with a small baby, while Father went to Council meeting. How she saved me and probably the house by heaving a lighted kerosene lamp that was about to explode into the yard through the glass of the window, where it went off like a grenade. At another time she spent an evening of terror while Father was at Lodge meeting, petrified by the moaning of some wild animal probably escaped from the visiting circus, only to find that it was the bull fiddle at a dance in Lyceum Hall a couple of blocks away.

The Frick house, so called because it was purchased from Mr. Frick, was in another part of town, on North Street or North Avenue. It was larger, had a stable for a horse and buggy, garden space and a small apple orchard. Father soon acquired the horse and buggy and the family became more mobile.

My recollection of life in the Frick house is somewhat sketchy and it is a little difficult to distinguish between what I actually remember and what I have been told. My nearby playmate, with whom I played and fought was Morrel Gilman. The Bleck family lived next door, and the Zerlers, in a fine brick house were down at the corner. Across the street were

Wedding pictures of my
parents, Major C Mead
and Rose Anna Robinson,
Married June 24, 1881.

the Fullers. Mr. Fuller was the town's leading attorney. There were three girls, Blanche, Hallie and Leta. Leta was my age and the youngest. I recall the night their mother died very suddenly and my mother brought the girls to stay with us until their aunt, Mrs. Glidden, came to live with them. Mr. Fuller disappeared from the picture soon after the death of his wife and "Auntie" lived there and brought up the girls. Leta was a classmate through grade school and high school.

I am sure that my sister Arlisle was born in the Frick house. This was in 1885 and I was only two years old. Arlisle was born on June eighth, her grandmother Robinson's birthday and was named Arlisle Maria after "Nana Rob." Arlisle was always called "Arlie," and still is. My other sister, Jessie Rose arrived two years later in 1887. Before we moved from the Frick house I became old enough to have faint memories of the sisters. I remember that one of them broke an arm in some strange fashion in the wood shed. And I recall that Jessie, when a toddler, drank the contents of a bottle of ipecac and after frantically getting the doctor, spent hours in the orchard, getting rid of everything.

One of the favorite stories of my parents, about their precocious small son was when my mother found me in a muddy puddle of rain water poking and scratching the bottom of the puddle with a stick. When she asked what I was doing I told her I was looking for a Waterbury watch. This was obviously a likely place to search for one. The Waterbury, by the way, was the first of the dollar watches to be followed later by the Ingersoll. Needless to say, I got the watch! There has been much argument in the family as to whether I really thought Waterbury watches were buried in water or was just working a slick trick on an indulgent father.

On one eventful day Louis Pradt, father's college roommate and recent law partner at Wausau, arrived on one of those astonishing high-wheeled bicycles. At breakfast, mother had pancakes and maple syrup. She sent the hired girl to refill the empty syrup jug; and when the guest poured a liberal supply on his stack of cakes, he turned to Mother and asked if the syrup came from pine trees. The syrup jug had been filled with varnish from a container that closely resembled the syrup can!

One adventure at the Frick was rather nasty. I slipped on the back "stoop" and dove head first into the wooden "swill" bucket. The term was a carry-over from the farm, where all the table refuse and dish water went into the swill bucket for the hogs. And no soap was used in washing dishes because it was bad for the swine.

Dad's law practice must have started very well to justify the purchase of the new house, but an important contributing factor was that Mother's mother, always affectionately called Nana Rob and her sister, Aunt Amy Robinson came to make their home with us. That was a very important event and a happy and fortunate one. Nana Rob lived with us most of the time until her death in 1926 at the age of eighty-four. Aunt Amy served most effectively as secretary in Father's law office until about 1890 when she married and moved away. Grandmother Robinson contributed immensely to the childhood life of my sisters and me, and a wonderful story could be written about her. I am sure I should digress, at this point, from the Mead story, to tell you some of the things I have been told and the things I remember about her.

She was a remarkable and adorable person. She was Nana Rob to us, and to her many friends and more distant relatives she was Aunt Rie. She was born Anna Maria Bates, on June 8, 1842 in St. Lawrence County, New York, one of a large family of brothers and sisters. Her parents had immigrated from England. She was married on November 12, 1857 to Elisha Robinson, a school teacher at Onion River who also had a little country store and was postmaster of the local post-office. He was also a part-time preacher of the Gospel. They had two daughters, Rose Anna and Amy Jane. My mother, Rose, was born on October 15, 1860 and Aunt Amy a year later. Shortly after Amy's birth her father, Elisha, volunteered his services and left to do his duty as a soldier in the Union Army in the war of the Rebellion. He died of dysentery in an army camp in Arkansas on September 16, 1863. The first knowledge his young wife had of his death was the unheralded arrival of his body at the railroad station in Waldo! He was buried in Lyndon cemetery, as was his widow, sixty years later.

Anna Maria, a tall, thin, beautiful girl, twenty-one years

Great-grandfather Noah Robinson,
Father of Elisha J.

old, was left a widow with two infant daughters to raise and educate. And she did a remarkable job, with fortitude and wisdom and entirely through using her own chief resource, intelligence, without help from anyone.

For a time she ran the little store and post office, and then Andrew Whiffin, who was Superintendent of the Sheboygan County Asylum for the Insane, employed her as Matron for the women patients. She succeeded so well at this job that she was appointed Matron for the Criminally Insane Women Prisoners at the State Penitentiary at Waupun, Wisconsin. She served in this capacity until she moved, with Aunt Amy, to live with us in the Frick house about 1885. My mother and her sister lived much of their girlhood in their apartment within the walls of the prison and attended high school in Waupun.

In the late 1880's, maybe it was 1890, Aunt Amy Robinson married Thomas Brown and went to live in western Colorado. Thomas Brown's father had died in Plymouth, and his bachelor son had come from the West to bury his father and attend to the disposal of the estate. My father looked after the legal side of the probation of the will and other matters, and Thomas met his attractive secretary. Thomas was a newcomer to Plymouth, as he had gone to Colorado as a boy to benefit his weak lungs. It must have been a good idea, as he returned a very rugged appearing man. He had been cowboy, ranch hand hunter, and prospector, and he looked the part - tall, thin, well bronzed by the sun, and wearing a wonderful "western" moustachio.

After the wedding, Aunt Amy and Uncle Tom traveled to Denver by train. There he bought a covered-wagon outfit and with his bride started westward over the Rockies, on what must have been, at least to the bride, a trip into another world. In the autumn they camped one night in a spot near Mesa, Colorado, liked the valley, and acquired a small farm, or more properly, a ranch. Tom put a floor in the tent,

Grandfather
Elisha Robinson
and his wife
Anna Maria.

spent the first winter in camp, and built a modest ranch house in the spring. They had two children, Charles and Amy. Both married and are still living with their children and grandchildren in Mesa County. Uncle Tom and Aunt Amy are buried in Colorado.

This rather long digression from Meads to Browns, Wisconsin to Colorado, was necessary as an introduction to one of the truly great events in the story. We all went on a trip to Colorado! In a way it was the result of Dad's interest in politics. He had been active in politics since 1888 when he first was a candidate for the State Senate. In 1896 he was a delegate to the Democratic National Convention that nominated William Jennings Bryan after his dramatic "Cross of Gold" speech. But Father couldn't go for Bryan and "free silver," and bolted with the "gold democrats" to the rump convention in Indianapolis, which nominated Palmer and Buckner. This created quite a dilemma to my politically minded father: how to vote in November without risking his political future. So he ducked the problem by taking the whole family on a trip to Colorado to visit Aunt Amy, Uncle Tom, and Nana Rob, who was living with them. The trip was of course planned to cover election day.

That was probably as inexpensive a trip as was ever taken by so many so far. We traveled mostly by day coach, carrying food in a lunch basket and getting milk and tea or coffee at the lunch-counter stops. Father was Divisional Attorney for the Chicago, Milwaukee, and St. Paul Railway, and by virtue of that he and Mother had annual passes which entitled them to unlimited free transportation on that railroad. He had no difficulty in securing round-trip passes for the remainder of the family and letters to the proper officials on the other lines we must travel over.

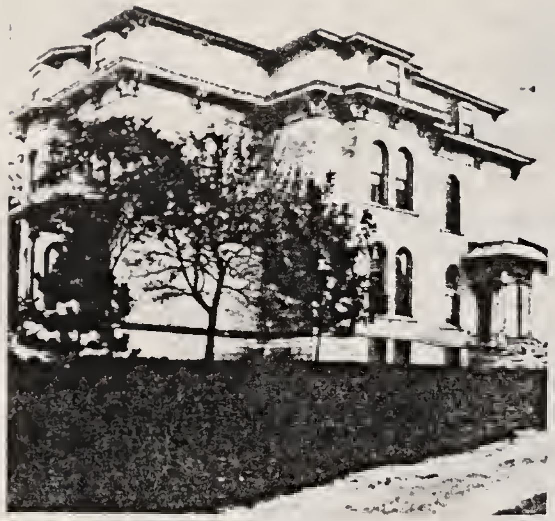
We rode by day coach to Chicago and spent the night there in a hotel near the station. Next day it was a long trip to Omaha. Soot, cinders, and noise. Train butchers with paper magazines, candies, and everything else that train butchers sold This was in the pre-vestibule days, and passing from one coach to another was a big adventure in which there was a good chan of falling off the train.

Omaha was the end of the line for the C. M. and St. P. Ry., so Father went to the offices of the Union Pacific and came back smiling with round-trip passes for all to Denver, on the Union Pacific. We had our only Pullman sleeping-car ride between Omaha and Denver, with Mother and the two girls in the lower berth and Dad and myself in the upper. I remember vividly the thrill we all had at the first sight of the snow-toppe Rockies, as we approached Denver.

We had a day and a night in that city, and Dad had no difficulty in securing the important round-trip passes over the Denver and Rio Grande Railroad for the remainder of the trip. The trip through the Colorado mountains was wonderful. We were tourists out to see everything. Colorado Springs was the first stop, with the Garden of the Gods, Cheyenne Canyon, and other attractions, at a time before they had been ruined by commercialization. The Royal Gorge and Hanging Bridge were just as they are today; we rode on the steps of the day coach, and the curves made part of the family car-sick. When we we through Leadville we had a couple of nosebleeds from the altit

Finally we reached the station nearest Mesa. It was good to leave the train. This was the morning after election day, and I recall Dad's concern about election returns. Uncle Tom met us with a "lumber wagon," and we bumped over some twenty miles of roads to the ranch. This kind of vehicle has no springs, except for the driver's seat, which was suspended on a couple of flexible wooden poles which came slantingly up from the rear on either side. Father and Mother took turns riding with Uncle Tom, and the rest of us rode on boards laid across the wagon box and held in place with cleats. It was rough but it was wonderful.

Every day of the two weeks at the ranch was full of interest. I learned to husk corn with a peg attached to a strap in the palm of the hand, went rabbit shooting, gathered pine nuts, and went for wood in the hills. The return trip was muc like the trip out but with fewer stops, as "we had seen everything." At an overnight stop at Manitou Springs, we added a bird cage with two canaries to our hand luggage and carried it all the way home and raised many generations of canaries. W got home in good health to be met by all of the relatives, and in some ways that was the best part of the trip. I remember



The Brick House
in Plymouth, Wisconsin.

Uncle Charlie Eastman roughly rubbing my cheek with his hand and shouting "This boy needs a shave!" I hadn't realized this fact but I did need one badly, as I was beginning to look like a junior member of the House of David.

A few years prior to the Colorado trip, there was a bad wreck on the "Milwaukee Road" at a point just south of Plymouth. I believe two trains collided on the single track line, and the "wrecker" which sped the fifty miles from Milwaukee to clear away the mess became a wrecker in fact as well as name by slamming full speed into the wreckage. This was a major event for Plymouth. I don't have statistics on the number of dead and injured, but I do know there were a lot of damage claims to be taken care of, and a flood of legal work for the Division Attorney, M. C Mead. The financial rewards for this work enabled Father to buy a bigger and better home. He sold the Frick house and bought what was always referred to as the Brick house, called that because it was a brick house. We moved into the new home in the early '90's.

The Brick house was at the southwest corner of the city, on Milwaukee Avenue and Reed Street. It was a more pretentious home than the one we had left, with kitchen, dining room, study (we called it the library), sitting room, parlor, and front hall, on the first floor and five bedrooms and a bathroom on the second floor. The bathroom had a white enameled iron tub and a wash bowl, but no toilet. Water for the tub and bowl was supposed to come from a rainwater tank in the attic, but this was so small that most of the water had to be lugged from the kitchen, after it was pumped from a large basement cistern. Water was heated on the kitchen range.

The third floor, the attic, was the full size of the house and full height, and could have been finished off into rooms, as many as on the second floor. It made a wonderful place for storage and for a lot of other uses. I kept my precious bicycle there in the winter, and there was room to ride it. One day, when Mother appeared with bruises on her forehead and arm, a slightly skinned nose, and a poorly concealed limp, she confessed, under Father's professional questioning, that she had tried to ride my bicycle in the attic.

I set the attic on fire once, with one of my many experiments, and came near to burning down the house. The fire started when spilled alcohol from an alcohol lamp ignited on the chest-high shelf that encircled the attic and ran back under the eaves, making a grand place to start a blaze. I was badly frightened but managed to smother the fire with a couple of woolen blankets shoved into the space. These neatly folded, scorched blankets among the other bedding remained an unsolved mystery.

The house had a flat tin roof, and the upper story sloped slightly from the vertical and was shingled. I believe the architectural term is Mansard roof.

There was a hot-air furnace, which was a great improvement over the base-burner coal stove and wood stoves in the Frick house. The cellar or basement was coextensive with the house, with plenty of head room and a cement floor. It was divided into four large rooms, and very useful.

There was a barn with chicken house attached, and we raised chickens and gathered our own eggs. Lots of garden space and small fruits and berries, cherries, plums, and apples in quantities, and I don't remember that it was necessary to spray continuously in order to have fruit, as is the case now.

There was plenty of living space in the Brick house. I recall the huge and hideous brass chandeliers in the parlor and sitting room. They held kerosene lamps with vari-colored fluted glass shades and could be pulled down and pushed up as was necessary in order to light them. Their care, together with all the other kerosene lamps, was a major household chore.

After a few years the Cold Storage Plant was built In it was a big Corliss steam engine and a dynamo with more electrical capacity than was needed for the plant. The company sold the excess power for house and street lighting. We had the Brick house wired for electric lights, and most of the kerosene fixtures were changed over to accommodate incandescent bulbs. The wiring of the house was of tremendous interest to me.

I have been trying to recall what year we moved into the Brick house. I know we were there in 1898, the year of the Spanish American War, as I remember my grandmother Robinson quietly weeping as she watched a trainload of soldiers moving out of Plymouth. We could see it from the kitchen door

The writer, W. J. M., on Trixie,
in front of the Brick House.

I know we were there in 1894, as that was the year Dad gave me a Shetland pony, Trixie. I first saw the pony one never-to-be-forgotten morning there in the barn, with Arlisle, sick in bed with some childhood disease, watching from the upstairs window.

The Brick house was not our final place of abode in Plymouth. I cannot recall, at the moment, what year we moved in or what year we moved out. I am sure we left before 1900, as that was the year I was graduated from high school, and I know we had left the Brick house then. My best guess is that we lived there about ten years and moved elsewhere about the autumn of 1897.

An important element in the lives of the Mead family during my boyhood was the Cottage at Elkhart Lake. This was a beautiful lake about eight miles north of Plymouth, lying among wooded hills, in the terminal moraine country. There was the village of Elkhart Lake, with resort hotels and a railroad station at the north end of the lake and, at that time, rather widely spaced summer cottages around most of the lake shore.

About the time we moved into the Brick house four very congenial families, the Dows, the Gilmans, the Eastmans and the Meads decided to build a cottage on the lake to be used jointly. It was a grand idea and the cottage was a great success. Here the kids learned to swim, handle boats and catch fish. There were three boys, Morrel Gilman, Rob Dow and myself of about the same age, five girls, Miriam and Marjorie Eastman, my sisters Arlisle and Jessie and Margaret Dow.

The cottage had one large room which served as kitchen, diningroom, and club room. There were four bedrooms all opening into the main room. The partitions were only eight feet high so everything could be heard everywhere. It was rare that there were ever more than two families at the cottage at the same time so the space was usually adequate.

The women sometimes entertained friends from Plymouth and on one of these occasions Morrel Gilman and I were banished from the cottage for the afternoon. We explored along the shore south of the cottage and in a clear space in a heavy growth of bushes we sat by the lake and bemoaned our banishment. With a couple of large shells we dug a hole in the gravel between us and wondered if the lake water would percolate through the gravel and appear in the hole if we dug deep enough. The water appeared, rapidly cleared and we could see sand boiling up in the bottom; presently the water was running from the hole into the lake, and we decided we had "dug a spring."

About this time we were called to the cottage by the bugle-like voice of Mrs. Gilman, and were asked to go on the usual errand to the pump at the Bruns farm a quarter mile away, for water. We explained to the Mothers that we had dug a spring and could get better water there. But the Mothers just laughed and we rebelled. About that time Dad and Mr. Gilman appeared and they listened to our story. Mr. Gilman said he would take a look and he got a bucket and dipper and followed us. He looked at our spring with slightly profane amazement. "By God it is a spring, a wonderful spring." At the cottage the water was accepted under protest and then everyone was taken to the spring in a rowboat. We never went to the Brun's well for water again - just got it from the spring with the boat.

The following weekend Mr. Gilman, with the help of a couple of other men set a section of large tile around the sprin and broke an opening in the lip of the tile. The water filled the tile and overflowed through the notch in the lip. We called it the Ponce de Leon spring and it supplied water for all the cottages at that end of the lake for many years. I presume it still flows.

The third and final move of the Mead Family to a new home was brought about by two factors. These were the financial burden of the Brick house, which was not helped by the "depression" of the early '90's, and the search for Eldorado by Dr. Samuel Mead.

Dr. Mead had a great desire to move to a warmer climate. The cold winter drives at all hours of the day or night to patients far out in the country quite naturally led to this desire. One of these cold drives through the snow behind his faithful old mare, Bessie, came close to costing him his life. I was much impressed on hearing him tell of the incident. He had called one night on an old friend, a paralyzed, bedridden old farmer. His patient announced that he was going to do the doctor a great favor - terminate these nasty cold drives by sending him right to Heaven - and that he, the patient, was going along. He produced a double-barreled shotgun from behind the head of the bed, and the proposed trip appeared inevitable. Doctor Samuel said it was a wonderful idea, thanked the man with the shotgun most heartily, and asked him to wait while he put a blanket on old Bessie because it would be too bad to leave a good horse to get a chill. The farmer agreed to this humane act, the doctor slipped around to the kitchen door, and the good wife said she would take the gun away from the "old fool"; she did just that, and the doctor returned to his patient. Little wonder he desired to move to a warmer climate.

One summer evening during the time that negotiations were in progress between Father and Doctor Mead over the exchange of homes, Father sent me to Dr. Mead's home with a paper to be signed by the Doctor. The Doctor had recently returned from a trip around the world, probably the first resident of Plymouth who ever did this.

He signed the paper and then placed in my hands a dark object which he said was the hand of an Egyptian mummy. Sure enough! It was a hand, light in weight and dark brown in color but definitely a hand. While I was still holding hands with the very dead Egyptian he gave me a cracker on which something had been spread and told me that it was genuine Roquefort cheese he had brought back from Europe. I ate the cracker and cheese without enthusiasm and was not sure whether the strange odor came from the hand or the cheese. Father almost had convulsions when I returned home and told him about it. To this day the fragrance of Roquefort (I now think it is pleasingly fragrant) brings to mind Egyptian mummies.

In a search for a warmer place to live, he became interested in Virginia and made a trip or two to that state. He talked about it so much that Father dubbed him "Old Virginie." The Doctor finally got tangled up in a real estate deal for the purchase of a farm in Virginia. When Father checked into it at long last, it developed that Doctor Samuel was on the verge of losing his shirt and his home in Plymouth for some worthless southern real estate. Some fast maneuvering involving, I believe, a transfer of his home to his wife and the trading of the Doctor's home for the Brick house, foiled the Virginia deal.

So we moved out of the Brick house and into what might well be called the Dr. Mead house. The family lived there for the remainder of its existence in Plymouth. My father died there in 1925, and Mother lived there until a few years before her death. She then went to live with her oldest daughter, Arlisle (Mrs. Arthur J. Wiesender), in Berlin, Wisconsin, about sixty miles west of Plymouth, until her death in 1951. After that the home was sold and the Mead family at last left Plymouth, after living there for seventy years.

The "Doctor Mead place," at the corner of Collins Street and a cross street (later named Mead Avenue, to honor my Father), was a modest but fine two-story frame house built about 1840. When some alterations were made, we found that the timbers of the frame were of hand-hewn oak, so hard as to almost defy a saw or chisel.

It was a bit of a comedown from the more modern "Brick house," but we loved it. No central heating system (one was installed when I was in college), so we were back to a base-burner coal stove in the living room and "air tight" wood stoves in the study and in the hall upstairs. There was a "drum" on the stovepipe which passed through the room used by Arlisle and Jessie above the living room.

No running water and no bathroom when we moved in. Years later, after the city installed a water supply and sewage system, a small room at the head of the stairs was converted into a bathroom, and a lavatory was installed in a closet under the stairs on the first floor.

But before these modern innovations arrived, there were the tasks of feeding coal to the coal stove, wood to the other stoves, and the removal of ashes. Also there were the freezing trips in the winter to the little building behind the grape vines in the rear, variously called the "privy" and the "backhouse." And this was before the day of nice rolls of tissue-soft paper! Yes, we did use newspapers and the Sears, Roebuck catalogue!

The Saturday night baths were in a washtub in the kitchen, with the water heated on the kitchen stove. It really used up a long Saturday evening. There were loud protests from the girls, ordered to get at the job soon after supper so that it wouldn't be too late for Dad, who came last. After a few years a "cabinet" bathtub was installed in the (fortunately) roomy kitchen. This was a zinc bathtub in a paneled wooden cabinet which swung up on end against the wall when not in use, and looked like some kind of cabinet. Water was drained out through a pipe set in the wall and distributed onto the flower garden through a short piece of garden hose.

One Sunday afternoon when Mr. and Mrs. Gilman came to call and brought their small son Morrel, a pal of mine, we boys discovered that the drain hose from the bath cabinet made an excellent speaking tube, and that a voice coming through the tube from outdoors sounded as though it came from someone inside the cabinet! Morrel squatted outside the kitchen window and yelled through the hose for help. I rushed into the living room and got the two fathers; Mother and Mrs. Gilman were in the garden. Father and Mr. Gilman frantically tried to open the cabinet while Morrel continued to cry for help. Mother at last appeared just as Father came from the woodshed with an axe in his hand. Mother, of course knew about the catch and opened the thing to liberate the nearly suffocated boy who wasn't there at all! It didn't appear to be funny until we had a thorough bawling-out.

The really huge kitchen had a "walk-in" refrigerator with a high door to the outside, where the iceman put the ice. Dr. Mead was a gourmet, greatly interested in good things to eat, and had designed and directed the installation of this remarkable "ice box." After the house was wired for electric lights, I installed a light in the refrigerator with a switch operated by the door. The light went on when the door was opened and was extinguished when the door was closed. Father did not have any faith in the contraption; he refused to test it by entering the box and having the door closed on him, and I was ordered to take it out.

Like every youngster I wished for a .22 rifle. Other boys had them and went hunting for rabbits and squirrels. I had been in the woods with the Conover boys many times and I cannot recall a single gun-shot accident. One morning Father came to breakfast storming about the pesky red squirrels that had scampered around over his head all night. He said he would give me a dollar apiece for red squirrels, that there must be some way to get them. I hiked to the hardware store and persuaded Mr. Gaffron to let me have a beautiful single-shot bolt-action Marlin .22, which I had fondled longingly many times, with the firm promise that I would pay for it the following morning. The price was five dollars! I went home and shot a total of six squirrels by noon and when Father came home for his mid-day meal and nap I had the six squirrels displayed in a neat row on the top step at the front door. He protested that he didn't really make the offer seriously but Mother backed up my claim so he dug out the cash and I paid for the gun and had an extra dollar for ammunition.

Opening from the kitchen was a pleasant dining room and beyond that, toward the front of the house, a large living room. The front entrance door opened directly into the living room, but in winter a temporary vestibule or "storm house" was erected. This was stored in the barn when not in use.

My Father
in his rose garden.

Opening from the living room was the parlor, with the piano and the better chairs. This was more formal than the living room and used only when company came. A second doorway from the living room entered a small bedroom which served mostly as a passageway to Father's study, or the "den." Here Dad had his beloved books and his platform-rocker easy chair. The small bedroom between the living room and the study was a handy place for callers to drop their wraps, on the little single bed that was always there. This room also served as an overflow bedroom for guests and was useful when a member of the family was ill. In this little room Father went through his final illness and died in 1925.

A third door led from the living room to the enclosed stairway to the second floor. This narrow stairway was the scene of a near tragedy many years later. Grandmother Robinson, probably eighty years old, fell on the stairs and was so tightly wedged against the door at the foot of the stairs that my mother, alone with her in the house at the time, could not open the door. She hurried around, up the back stairs and came down above Grandmother. Here she sat down on the steps and, with her feet against the door, gave a desperate heave and succeeded in forcing the catch. She got her mother onto the bed in the little room and revived her. Grandmother was not badly injured but could not have lived long in the upside-down position behind the door. Mother limped about for a while with some badly strained muscles and joints. She was ingenious and resourceful, and could cope with almost any situation.

There was a wide expanse of lawn, trees, flower gardens, and vegetable garden. We had a big barn, with box stalls for the horse and pony. Being on a corner, there was a most discouraging length of sidewalk to be shoveled in the winter. Keeping the lawn mowed was also my job, and it was one day while mowing the lawn that I first met Bertha Taylor. This was in the summer of 1902, and I was to enter the University in the fall. A high-school classmate, Leta Fuller, had entered the University two years previously and had joined the Kappa Gamma sorority. Bertha Taylor, also a Kappa, had come to Plymouth to visit Leta. They walked by as I was mowing the lawn, and I was introduced to the girl who became my wife eleven years later. I'm sure I didn't make a very good impression at that time.

One of the innovations that appeared in Plymouth after we moved from the Brick house was the telephone. Anything electrical aroused my interest and curiosity. Electric door bells, electric lights, telephones had come in rapid succession. As a premium for new subscriptions to the Youth's Companion I had received a magneto. This was a small crank-operated electric generator with two metal handles attached to cords. It was primarily to administer electric shocks to the curious or unsuspecting.

One turned a crank to ring the telephone and I had a strong suspicion that the thing inside the telephone box was a magneto like mine. I had a powerful urge to experiment and see if my magneto would ring the telephone.

One Saturday night a heavy rain and wind storm brought tree limbs down onto the telephone wire and broke it. Father had tried the 'phone and found it dead. He was rather relieved because now the d--- thing couldn't ring and spoil his Sunday morning. It was a wonderful opportunity to test my theory. I went to the front porch, connected one lead from the magneto to the telephone wire and the other to the ground wire and turned the crank and the telephone did ring! Before I could try it again Father came, muttering, from his study, yelled "Hello" into the transmitter a couple of times, verified from Mother that the thing had actually rung and returned to his easy chair and the Sunday paper. When he was nicely settled I gave it a good long ring. This brought Dad out of his den again. He yelled into the "contraption of the devil" and banged the old carbon-grain transmitter and finally announced that they must be working on the line. I thought perhaps I had gone far enough but couldn't resist one more turn of the crank. Father really came a-roaring this time. He hollered and banged and then announced that his morning was ruined. It was probably Tet Sharp trying to get him, and he might as well go to the office.

I pulled off my wires and went around the other side of the house, left my equipment in the wood-shed and joined Mother in the kitchen. Father came out in the kitchen in his raincoat and rubbers, carrying an umbrella and explained that he knew Tet Sharp had a lawsuit in the offing so he would have to go. Then he turned and came back and said: "Son, did you have anything to do with ringing that telephone? I've got a suspicion you were behind it." I confessed, Father started to bawl me out, but Mother reminded him that he didn't have to go to the office. His scowl changed to a grin and I had to demonstrate the stunt to the whole family. I was obviously a budding Edison!

I am afraid this letter has become a patchwork of disconnected anecdotes and incidents. I am sorry they are not in correct chronological order, but they did all occur in Plymouth while I was growing up. But this story would not be complete without telling you about the Hub Club.

A social organization in Plymouth that I well remember was the Hub Club. Plymouth, situated at the centre of Sheboygan county was of course the Hub City. The Hub Club was a somewhat exclusive outfit, most of the member families lived on "Yankee Hill". This was the high ground that rose in a steep hill on the side of the Mullet River opposite the town. The street, overlooking the town, along the top of the bluff was eventually called Collins Street. Here lived the Smiths, the Dows, the Husons, the Meads, the Wheelers and not far away the Gilmans, Eastmans, Robertsons and the Zerlers. All of these people and a few more made up the Hub Club, and they had a wonderful time and did much for Plymouth. They organized and put into operation the first public library and had other civic accomplishments. They played whist, not bridge, had dinners and dances and once a year put on a theatrical performance which was really good.

One of the members, Ed Dow, president of the First National Bank of Plymouth provided a bit of entertainment one muddy day, that had the whole town laughing. From his chair in the front window of the bank Mr. Dow had an observation post from which he could really keep his eye on the town. The main street of the town was unpaved and a sea of mud in rainy weather. To enable pedestrians to cross the street there were rows of flag-stones or stepping stones, rather slippery but better than wading through the mud. The city folks used them but the farmers in their boots didn't notice the mud.

A new family, also with the name of Dow had recently moved to Plymouth from Chicago and Mrs. H. E. Dow, a strikingly dignified lady found Plymouth somewhat crude, but made the best of it. The president of the bank, from his observation post saw the new Mrs. Dow (not related) making her way gingerly across the street in front of the bank. She had dropped something white in the street and was walking rapidly down the sidewalk on the far side. The gallant bank president dashed out, retrieved the lace-decorated unmentionables which the lady had stepped out of, and with the muddy white thing in his hand pursued and caught the embarrassed lady and presented her with her abandoned apparel. I don't know what she said or did. It took Edward a long time to live this one down at the Hub Club meetings.

October 20, 1957

Dear Family,

I have neglected these letters to you for at least six months. Too many other things to do - beans, tomatoes, strawberries, and so many other ways of doing nothing that I have been too busy to write. But time goes on. Have passed another milestone, the seventy-fourth, and I'd better get back at this job while I can still poke the keys.

Since these letters are about family history, I wonder if it would be appropriate to go into the matter of how I happened to become a geologist. I know it really matters very little what I write, because I can't believe that anyone will be interested in reading the stuff. But I find it rather fun to scribble away on a pad of paper and then pound it out on the typewriter, and if it keeps the old man busy and reasonably happy it may be worth while!

The events or factors that steered me into geology seemed quite unimportant at the time, but looking back along the road I have traveled, they stand out clearly. The first was a toy camera which introduced me to photography when I was about eight years old. Second, a high-school teacher who really taught me geometry. Third, an uninteresting, dull curriculum in Electrical Engineering at the University of Wisconsin. Fourth, a senior student writing a thesis in geology. Fifth, my first geology professor, who brought the subject to life for me.

The camera was a premium for securing new subscriptions for the Youth's Companion. This was a weekly magazine for boys, and a very good one. I was a subscriber for many years and remember the carefully treasured stack of "Companions" in the attic, kept because of the "continued" stories. Much better to read a serial all at one time on a rainy summer day than to wait for it week by week. But more important was the annual Premium Catalogue. It had a yellow cover and contained the most wonderful assortment of toys and gadgets, beautifully illustrated and described, to be had as rewards or premiums for securing new subscriptions. That was how I got my wonderful steam engine that really worked and blew its whistle, and later an electric magneto that gave electric shocks to anyone grasping the handles. But most important of all was the camera. I think Mother talked me into getting the camera "with complete kit and directions, including six dry-plates" because she was really a gadget-minded boy at heart, and very excited about taking and developing pictures.

The camera was a small, cubical tin box. The back came off like a can cover. The lens had no shutter or diaphragm, just a removable cap. Glass "dry-plates" were used, but there was no plate holder. The plates were placed in the rear cover before the cover was put in place, and exposures were made by removing and replacing the lens cap! But we did make some pictures. I remember one of sister Jessie in her high chair. As we developed the plates, and printed and toned the prints, I was thoroughly inoculated with the virus of amateur photography; and this turned out to be the first step toward my becoming a geologist.

A few years later, when the whole family made the long pilgrimage to Colorado, I was the official photographer, carrying one of the first roll-film Brownie cameras. It was rolled film, all right. The negatives were like black lead pencils, and it was almost impossible to flatten them out to make prints.

My next big interest was electricity, because electricity in any form was wonderful and new. Electric bells were installed in the school building! Imagine that! The principal, Mr. Gaffron, pushed a button, and the bells rang! One of the great thrills was when Mr. Gaffron took Morrel Gilman, Bob Dow, and me down in the basement of the schoolhouse and showed us the wet batteries that made the electricity. This was long before the advent of dry cells. He removed a wire from the batteries and made sparks by rubbing the wire along a file. That made me shiver and brought a salty taste to my mouth, just the thrill of seeing electricity. Then he explained how the bell worked by means of magnets made by winding insulated wire around a piece of iron, and how the magnet dropped its load when the circuit was broken, and how the bell was made so that it broke its own circuit, which was closed again by a spring only to be broken again by the magnet; and this rang the bell! What a wonderful world!

A few years later, when the Cold Storage Plant was built, the engine room was equipped with an electric dynamo driven by a huge Corliss engine. This developed more electric power than the plant required, and the surplus was used to light up a few homes. So the interesting job of wiring houses for electric lights began. I became a volunteer helper and nuisance to Mr. Capps, the man imported from Milwaukee to do the wiring. That was before the days of metal conduits and BX cable; the wire was just pulled through holes bored in the wood. Many of the older homes in Plymouth are still operating on their original wiring.

Electric streetcars were installed in Milwaukee, and Father took the whole family to Milwaukee on the train, just to ride on the electric streetcar. We also visited the Milwaukee Exposition, and with things in our ears connected to rubber tubes we listened to a talking machine, of course operated by an electric motor.

Bob Dow and I, living about two blocks apart, built and installed a couple of telegraph instruments. We made the crowfoot, gravity type, wet batteries, using zinc, copper, and copper sulphate; we strung the wires, and it worked perfectly. After we learned Morse Code, we carried on lengthy telegraphic conversations. One day in a storm we got crossed with the telephone wires, and all the telephones on that side of town rang when we telegraphed. Telephones (with cranks) had arrived, and so with electric bells, electric lights, trolley cars, and phonographs it was indeed the age of electricity.

Father reluctantly agreed that if I went to college - the University, of course - I would study electrical engineering instead of law. I remember his saying, "When you graduate from Law School you put up your shingle and can't expect to earn a living for a couple of years or more, but an electrical engineer can get a good job with good pay right away." So, I was to be an electrical engineer, if and when I could go to the University.

My high-school principal, Otto Gaffron, was the best teacher I ever had, bar none. He was a product of the local public schools, not a college man, except for a couple of sessions at the University summer school. He was editor of the local weekly paper, The Plymouth Reporter, and Principal of the High School. To the people of Plymouth he was Professor Gaffron.

In my class, which was to be graduated in 1899, there were several rather young students. One day Mr. Gaffron remarked before the entire school that he thought it would be an excellent thing if some of the younger members of the senior class would postpone graduation and remain for an extra year in high school. He asked the younger members to discuss the idea with their parents. Mr. G. was after not more than two or three in the class, and he was flabbergasted when twelve seniors volunteered for the extra year. The parents thought it was a wonderful idea. In 1899 I would have graduated at fifteen, and at that age what could I do? So twelve of us had the extra year, and Mr. Gaffron personally handled all of the teaching of this group. The one thing he did, for which I have always been grateful, was to take us through geometry, plane and solid, by having us "visualize" the problems. No drawings on the blackboard! We had to imagine the drawing and describe it during recitation. If an error was made in the demonstration, a hand or hands went up, and the first critic took over. The class sat there with closed eyes, intently "watching" the drawing on the imaginary blackboard. It was a grand experiment, and it worked.

When I met up with descriptive geometry, a subject required of all engineers at the University, and usually considered very difficult, it seemed to me that I had already had the course. It dealt with lines, planes, and surfaces in three dimensions and it was familiar ground. I did no studying and made no preparation for recitations, quizzes, or exams, because it was old stuff. No trick at all to visualize things in three dimensions, thanks to Otto Gaffron. Professor Millar, who taught the subject, couldn't understand how I could get perfect grades in everything in the course and do no work. So I told him about Otto Gaffron and his teaching of high-school geometry. And when I came to write my bachelor's thesis in geology, I used some three-dimensional geometry that saved the day and started me on the road to being a geology professor, as you will see later.

When I was a high school senior, the most probable job available after graduation was teaching school. I couldn't go directly to the University, as Dad just couldn't afford it, so I planned to be a schoolteacher and earn some money. But first I had to secure a Teacher's Certificate, and to get that I must pass a day-long written examination given by George Drury, the County Superintendent of Schools. I attempted the examination in Plymouth in May, on a day that I was not feeling very well, and fell flat on my face, figuratively speaking. Perhaps it was largely nervousness and stage fright, but I was licked and it looked like a major tragedy. But I found that I could try again a month later in Sheboygan Falls, a town about seven miles away. So I prepared for that and went to Sheboygan Falls and stayed at the home of Uncle George Peck, my grandmother Mead's brother.

I guess it was a big help to get away from my oversolicitous and worried family, particularly Dad. This exam went just fine. I recall my surprised delight when George Drury announced that Warren Mead had 100 in mental arithmetic! I

The little red schoolhouse in Johnsonville, where I taught in 1900 - 1901.

passed the examination and qualified for a First Grade Teacher Certificate, which permitted me to take on any teaching job in the county.

Then Mother and I, driving in the buggy behind Old Kitty started to travel about the county looking for a school to teach in. We found one about seven miles from Plymouth in Johnsonville, a little community of German people that was more commonly known as Schnopsville.

I started teaching in the autumn shortly after my seventeenth birthday. I was paid $40 a month, and my room and board cost me $2 a week, so my take-home pay for the year was about $200. It was a seven-month school. Farmer boys couldn't spend more time than that in school! It was a one-room schoolhouse, and I had kids of all ages, from five to eighteen - about twenty of them.

I usually went home for weekends. It was quite a job and kept me busy. The children were well behaved and I had no deportment troubles of importance. I lived with a wonderful German family about a city block from the school. There were Pa and Ma Nohl, two daughters, and two sons. The boys and girls alternated in age, and the three youngest went to my school: Bill, Arno, and the youngest girl, whose name I have forgotten. It really was a great seven months, but I overlooked a wonderful chance to learn the German language. I learned to card wool, spin it into yarn, and to play schofskopf.

When school was over, in April, I was a lost soul with nothing to do. This condition lasted for two dull days, and then George Drury (remember, he was County Superintendent of Schools) drove into the driveway and said I had to go to Hingham and finish out the two remaining months as principal of a "state-graded school." This was two rooms in a two-story schoolhouse with "lower" and "upper" grades. Miss Tibbits, teacher in the lower grade, had held that position for a long time.

The pupils had just killed the principal who taught the upper grade! Not with an axe or a gun. They had worried him to a point where he collapsed and died. He had collapsed at school, was carried across the street to the home of a farmer, and died. This had happened the previous day, and Mr. Drury urged that I go with him at once and take over the job. After hurried packing, he drove me the fourteen miles to Hingham.

This looked like a real promotion to me. Seventy-five dollars a month, and board and room for twelve dollars! I was interested in the money because I wanted to go to the University.

My new post looked quite imposing when we arrived. A two-story schoolhouse with a belfry and bell. A nice looking little town, much more imposing than Johnsonville, and one that seemed to have been transplanted from New England. There were one or two places where the house, woodshed, chicken-house, and barn were all connected up in what I later learned was typical New England style. The family names were New England names, in contrast to the German names I had left in Johnsonville.

I found a fine place to live, at the home of John Steenis, where his mother and sister lived. John had been principal at the Waldo school, and while teaching there had lived at home. He had gone to the University, so they could let me use his very comfortable quarters - bedroom, bath, and study - and Mrs. Steenis provided the meals. The back yard of the Steenis home joined the school yard.

Everything looked rosy until I learned more about the job I had stepped into. I found that poor Murphy's predecessor had been tossed out of school into a snow bank and didn't bother to return! That evening I was thoroughly briefed by a member of the school board and given a list of the trouble-makers, four of them, all of whose names I can still remember. There were really five of them, but one had not been attending school that year. At this time I weighed about 125 pounds, so I couldn't figure on handling the situation physically. So I was glad to settle for four.

The following morning I stood before the "upper" grade of about forty students. I had no plan, and I was not at all happy. They had disposed of two teachers and I was the third. They were quiet and solemn and stared at me with obvious curiosity. I assumed that they were making preliminary plans on just how they would get rid of me. I am sure that had I known the whole story, George Drury couldn't have persuaded me to take the Hingham school; but there I was, up to my neck in what looked like trouble.

Murphy was to be buried the following day, and the immediate business was to arrange to take the upper grade pupils to the funeral. The situation called for transportation, flowers, and funds. I had to have help. At that moment I had a most fortunate inspiration. Perhaps it was inspired by the old adage, "If you can't lick 'em, join 'em." I couldn't join them, but I figured I could use them. I told the room full of pupils that all I knew about them was the names and ages on the roll sheet before me. I said I would need help in arranging for the funeral and would ask a few of the older boys to remain with me and would dismiss the remainder with orders to be at the school at the usual hour the following morning. I then read the names of the four boys about whom I had been warned and heard an audible combination of gasps and groans. When the others had gone, I found four competent-appearing lads, looking somewhat surprised and bewildered. All had horse-and-buggy transportation available. I sent one to Waldo, where the necessary horse-drawn busses could be engaged, one to Sheboygan to buy flowers, and asked the other two to canvass the school district to collect funds for flowers and other expenses. The pupils were to be charged for the busses.

Poor Murphy's funeral went off the next day without a hitch. My assistants had done very good jobs, and at my invitation all of them remained and had supper with me. I thanked them for a good job done and told them I would like to have a lot more of their help. That I had come to Hingham to teach school, not to be a policeman. I said the President has a Cabinet, so why shouldn't a schoolteacher have one? They thought this was a reasonable idea, so I proposed that they be my Cabinet and run the school while I did the teaching! They fell for this idea with great enthusiasm. They were full of ideas, and we had a long talk about plans and division of responsibilities - I recall that one was to be chief of police.

The Cabinet plan worked out beautifully. They ran the school, and I did the teaching. These were big, husky farm boys with "know how." They rebuilt and painted both of the outdoor privies. Policed the yard and kept it neat. Planted trees on Arbor Day. They took over building the fire in the big wood stove that heated the room, and they served as a highly efficient F.B.I. on any petty incidents that occurred. We had a perfect school, with wonderful school spirit. George Drury just never did figure out what had happened to the Hingham school.

When I returned in the autumn to begin the new school year, my Cabinet was there to take over. The fifth member of the gang had returned. When they asked if he could be on the Cabinet, I gladly agreed. The smooth operation continued through the second year, with no unpleasant incidents. I laugh to remember how I accompanied the singing of the song in "opening exercises" each morning on my guitar! One other incident was humorous enough to be recorded. We had no laboratory or course in science, but the kids were greatly interested in a series of simple experimental demonstrations I enjoyed putting on for them. In one of these I demonstrated fermentation with a sugar solution and yeast; and then, of all things, I demonstrated that alcohol was produced in the process, by making a simple still of glass tubing and actually distilling alcohol! Shades of Carrie Nation!! What a thing to teach in school!

This year at Hingham was a pleasant and profitable one. I learned a great deal about young people, I earned more money, lived comfortably, and enjoyed association with a lot of fine people. Led a "joint debate" against the Adell School Principal, a University graduate, before a crowded Town Hall, and won.

After schoolteaching was over, in June of 1902, I found that I had saved enough money to start my college education. That same autumn I enrolled as a freshman in Electrical Engineering at the University of Wisconsin. Secured a room in a typical student rooming house, a private residence on University Avenue, with the usual horse-faced old-maid landlady, who was oh! so very prim and proper. I remember that I felt quite sure that none of my belongings escaped her inspection. My unlocked trunk sat in my room, and when I went home for the Thanksgiving holiday I printed a huge sign on a large white desk blotter and placed it on top of the contents of the trunk. The sign said: "MISS______ WE ALL KNOW YOU ARE A NOSEY OLD B____ AND STICK YOUR LONG, RED NOSE INTO EVERYTHING." I placed a piece of gummed paper where it would be torn if the trunk was opened. When I returned, the trunk had been opened all right, and Miss Nosey avoided me for a long time.

The Electrical Engineering course was fine so far as the basic courses in math, physics, and chemistry were concerned. But when we got into the E.E. subjects, I found them very dry and uninteresting. It was all a case of "study and remember what is in the books"; memorize the formulae; don't try to understand anything, just learn it.

I joined a fraternity, Sigma Nu. I secured a job at the State Capitol doing clerical work on the data for the Blue Book.

The job took my afternoons and made my schedule a bit complicated, but it paid $27 a month, and that was a big help.

I was having a good time as an undergraduate, but I wasn't enthusiastic about E.E. In the second half of my sophomore year I had quantitative analysis in chemistry under Professor Daniels. I contracted a cold in the late winter, and it left a chronic cold-in-the-head condition. Old Dr. Sheldon chirped definite orders to keep out of chemistry lab because of the irritating fumes, so I quit attending Quantitative Chem. Lab. Since this was a required course I would have to make it up at a later time, so I arranged to go to Summer School in order to do so. When my grade report arrived late in June, however, I was surprised and pleased to find full credit in Quant. Anal., with a grade of 88. Professor Daniels hadn't missed me at all, or perhaps he thought that I was such an excellent student that he could overlook my absence for nearly half the semester! However I did go to Summer School, but I didn't take Quant. Anal. I took nothing but Shop Practice and cleaned up all the required subjects in the E.E. course and a lot more, and got to be a really good mechanic.

I have always been glad I did this shop work. But also, and quite important as it later turned out, I had a few dates with a very nice girl named Bertha Taylor. A high-school classmate, Leta Fuller, had preceded me by two years at the University and had joined the Kappa Kappa Gamma Sorority. It was through her that I had met a Kappa Sister, Bertha Taylor, when she came to visit Leta in Plymouth the summer after her freshman year. Bertha Taylor was the only Kappa in Madison during the summer, so I went to see her and took her out occasionally. You will hear more about her later, as we were married in 1909.

In my sophomore year I was living at the Sigma Nu house. My next-room neighbor was Julius Warner, a senior in Geology. One Sunday morning I saw him in his darkened room peering into what I later learned was a petrographic microscope. He was muttering profanely and appeared to be drawing something on a piece of paper as he looked; then he crumpled the paper into a ball and dropped it among other pieces on the floor. I asked him what he was doing and he profanely said that he was not making Christmas cards. He explained that he was trying to make drawings of what he saw in the microscope in order to illustrate his thesis. I asked if it was against the rules to photograph the stuff instead of drawing it. He said photographs would be fine, but the Geology Department was not equipped to make photographs through a microscope. I told him that I thought I could photograph it if he could see it. So that afternoon we went to Science Hall with the microscope and my five-by-seven view-camera loaded with plate holders and dry-plates. It was my first visit to the Geology Department in Science Hall. I didn't know then that my offer to take the photomicrographs was leading me straight into geology and that I was to spend the next thirty-two years of my professional life in the Geology Department in Science Hall.

Using the view-camera and with the sun as a light source, I managed to make a series of excellent pictures for the thesis. This activity, of course, developed into a number of sessions; I asked a great many questions about the thesis, the microscope, and geology in general, until finally Julius suggested that I take the course in General Geology. And that did it. If I hadn't been an ardent amateur photographer I would probably not have been a geologist. (Thank you, Mother, for the little tin camera!)

At the beginning of my junior year I was well up on the required work, thanks to Summer School. So I "elected" General Geology, the beginning course in geology, and a whole new world opened up to me.

The course was given by Prof. N. M. Fenneman, and under him it was immensely interesting. It was a most refreshing change from Electrical Engineering. (I am sure E.E. could have been made just as interesting and attractive by good imaginative teaching, but E.E. was taught by a team of dull personalities with slide-rule minds.) In his first lecture Fenneman told us that geology, being a young science, had many new things to be discovered and that we might discover some of these new things ourselves! (The same thing could, of course, have been said about E.E., but no one said it.)

I became enthusiastically interested, and wanted to change my objective from E.E. to geology. I talked with Dad, who said it was my life that was being planned and that whatever I decided was all right with him. At the end of the first semester I became a major in geology in General Engineering. This was an arrangement in the Engineering Division of the University, later discontinued, which enabled a student to graduate as an engineer, but in a major subject not then covered by the designated branches of engineering.

I continued and completed all of the required subjects in E.E. except a thesis. Being a major in Geology, I was required to write a thesis in that subject. Fenneman suggested a physiographic thesis on the physiography of Lake Sheboygan. Lake Sheboygan was a small lake or pond, all that remained of what had once been a much larger lake and was now a great swamp area known as Sheboygan Marsh. It was an area of astonishing wild plants and flowers and mystery. As a boy I had made trips there for wild orchids and pitcher plants. I spent the summer before senior year exploring and mapping the old shoreline features of the vanishing lake, mostly on horseback. It was a good summer, but as things turned out it did not produce a thesis.

When I returned to Madison in the fall, I made my first serious contact with Dr. C. K. Leith, with whom I was going to be closely associated for the next thirty years - though I didn't know that at the time. I took a strange combination of subjects in my senior year, including General Mineralogy, Metamorphic Geology and Structural Geology. Mineralogy was under Bill Hotchkiss, a fellow Sigma Nu, and the other two courses were with Leith.

It was a hectic year, but quite wonderful. Not a dull moment. I had brought training in mechanics and a slide rule with me from engineering, and these were fairly new to geology at that time. Leith was a great hand to deal with things "in the by and large" and "in a general way," while I wanted to figure things out and get quantitative results. This greatly interested Leith. Perhaps he didn't quite understand it, but he was for it!

After the year was well started, Leith heard of my thesis under Fenneman on Lake Sheboygan. Leith had little time for physiography or for Fenneman, so he talked me out of the Lake Sheboygan swamp and into what appeared to be a distressingly vague assignment in metamorphic geology. He wanted to give me something to figure out quantitatively, probably with my slide rule. He said, in effect, "Mead, we know the sedimentary rocks all came from the natural destruction or weathering of older rocks and that all of them came ultimately from the igneous rocks. Figure out the relative amounts of the three principal types of sedimentary rocks - shale, limestone, and sandstone - that have been produced by the redistribution of the materials of the igneous rocks." That was a typical Leith assignment. I worked up, from published analyses, a pretty good average chemical composition of the igneous rocks and did the same for the shales, sandstones, and limestones. So I could say that 100 parts of average igneous rock had produced X parts of shale, Y parts limestone, and Z parts sandstone. But X, Y, and Z wouldn't total 100 because there were other products of weathering, which included the ocean salts and certain ore deposits. It was not an equation, just an approximation. In short, it was one big headache.

March and April went by. Now it was May, and I had no thesis to present so I could graduate in June. I had to have results, and all the mathematics I had available didn't help at all. Then, in the middle of a May night, good old Otto Gaffron's geometry came to rescue me. I had an inspiration to do it by means of a three-dimensional graph, which would establish limits within which the ratio had to fall, instead of giving a pin-point numerical answer; this latter was obviously impossible because of the limitations of the data and assumptions. I got out of bed and went happily to work. By breakfast time I had it licked, thanks to high-school geometry.

This got me a thesis. The thesis won the only medal that ever came my way. The "Science Medal" awarded by the Science Club of the Faculty for "The best Baccalaureate Thesis in Science." And winning the medal got me a job on the staff of the Geology Department as an Assistant in Geology, at $300 per year. That meant a chance to go on with graduate work in geology.

I was graduated in June, 1906, but was not present at commencement exercises, as I had left for a job in the field in the newly discovered silver-cobalt district of Ontario, Canada. I didn't know about the medal or the job as assistant until the middle of the summer.

Leith and Van Hise (whom you'll hear more about in a minute), operating under what they called "The Agents' Account," had been conducting mineral exploration in Canada for a number of years. They had had a field party in the silver-cobalt area the previous summer and were continuing the work for the 1906 season. Julius Warner was in command in the field, and I went up to work under his direction. In July we were joined by Leith and another one of his students, Bill Allen. Allen greeted me with great enthusiasm, shouting congratulations for winning the Science Medal, which he himself had won the previous year. It appeared that Julius Warner had known about this but had not told me; this was characteristic of Julius, who never told anything to anybody. It wasn't that he was unfriendly, he was just a clam. Leith arrived in camp soon after Allen and offered me the position as assistant in the Department.

During the previous school year, Julius had at one time been looking for a date for a fraternity party. I suggested Bertha Taylor, because Julius, being tall, liked tall girls. They hit it off very well, and during that summer in camp I frequently had to make the long walk into Cobalt for the mail and usually brought one or two blue envelopes from Bertha Taylor for him.

This didn't worry me, as at that time I had developed no special interest in my future wife.

Solving the thesis problem had one other educational by-product perhaps more important than the Science Medal itself. It brought about a close acquaintance with a great man, Charles R. Van Hise, geologist and President of the University.

A few days after I had explained to Dr. Leith my solution of the problem (I had constructed a three-dimensional model to illustrate the method), Dr. Van Hise appeared in the doorway of the cubbyhole I used as a place in which to work. This was an event I could never forget, and I am sure I remember today just what he said.

"Is this Mead?" he inquired. He went on to say, "Leith says you have knocked my redistribution chapter into a cocked hat. I've sneaked away from a committee meeting to come down here and hear all about it. Have you time to explain it to me?" (I must explain at this point that Dr. Van Hise had recently published a large and most important volume, A Treatise on Metamorphism, and had devoted one chapter to the same general subject Leith had assigned to me as a thesis problem. I had not been aware of this. Van Hise had estimated the ratio of shale, sandstone, and limestone to be 60, 30, and 5. My result was 80, 11, and 9. And the difference was much bigger than the figures appear to indicate.) So, there was I - a kid, a novice, a mere undergraduate - having the temerity to question the results recently published by one of the leading geologists of the world, and the president of my university. And he was so concerned about it that he had come down personally to have it out with me! I fervently wished I could disappear from that spot and that I had never seen that thesis problem.

But Van Hise quickly erased my embarrassment. He was wonderful. He wanted to know all about it, so I explained in detail. He was delighted, said he never had been satisfied with his approximation, thought it was a great way to use geometry, and said he never would have thought of a three-dimensional graph. We had a wonderful time together for over an hour, and I learned how a really great scientist reacts when a kid proves that he had reached a wrong conclusion. That was a very important incident in my education.

October 29, 1957

Dear Family,

This story about the Family and me appears to have narrowed down to me only, which proves what you have probably suspected - I am an egotistical old chap who likes nothing better than to talk about himself and boast. I confess that I quite enjoy writing these letters, perhaps because there is no one to interrupt my stories. No one to look bored and stifle a yawn or exchange sly sympathetic glances while pretending to be interested.

Now that I have told you why I became a geologist and what my education consisted of, it seems quite proper to continue on the subject of education and educating. Because that is what I have been doing for at least fifty-seven years: learning and teaching.

When I gave my last official lecture at M.I.T. in June of 1954, I had completed just half a century of teaching school. This particular lecture was before a class of Civil Engineering senior and graduate students, and the subject was Applied Engineering Geology. A paper bag was standing near one end of the lecture table, and at the end of the hour I warned that someone might forget his lunch. One of the students suggested that I examine the package and see if it was a lunch. The bag contained a note and a pinch bottle of Haig & Haig scotch whisky, which I still treasure, unopened. This was a very nice parting gift, and as a reward I gave every member of the class a final grade of "A"! You see, I couldn't be fired from the faculty no matter what I did - I was out anyway.

The fifty years of school teaching included the two years of teaching country school at Johnsonville and Hingham that I told you about in my last letter. Then came four years of study as an undergraduate student at the University, and in the autumn of 1906 I was back at the University as a graduate student and student-assistant in the Geology Department.

As I recall that year, there was more worry about teaching than study. Leith wanted to take advantage of my slide rule and recent training in mechanics, so he initiated two laboratory courses: one in metamorphic geology and the other in structural geology. I was to devise problems for the boys to figure out "quantitatively." It was a lot of work and worry, but fun; and Metamorphic Lab and Structural Lab did become established parts of the curriculum. Leith also had a course in economic geology which dealt with ore deposits and mineral resources in general. I had to develop a laboratory course in that subject, and do that while I was taking the course myself!

One of the big worries that first year was the approaching date of the Civil Service examination for a position on the United States Geological Survey. Leith and Van Hise were working on a Monograph of the Lake Superior Region (published in 1911 as Monograph LII of the U.S.G.S.), which was to cover the geology of the entire region. This region was important because it included the Copper District of Upper Michigan and the important Iron Ore Districts of Michigan, Wisconsin, and Minnesota. Leith wanted me as an assistant on that work, and that made it necessary for me to pass the examination and be appointed as a field assistant on the U.S.G.S. I suffered through the all-day written examination in a forbidding room in the Madison Post Office Building. After waiting in trepidation for weeks, I found that I had passed with a grade of 88, which was about par for the course.

This first year as an assistant enabled me to take a course in petrography under Bill Hotchkiss and to earn $30 a month for eight months. I asked for leave without pay for the last two months, May and June, so that I could start the field season as a Geological Assistant on the U.S.G.S.

After a very good summer in the Lake Superior Region, which I will tell you about in another letter, I returned to the University again as Assistant in Geology, but with my stipend raised to $600.

This was the year 1907 - 1908, and many things happened. I was able to get in another graduate course or two, and Leith took up golf. Leith's interest in golf was an important element in my life and my progress as a teacher. His lectures were always the first hour in the afternoon, at 1:30, and on pleasant days I soon learned what to expect. He would come into my office late in the forenoon and say, "Mead, a matter has come up that will take me away this afternoon. Will you take that class in Structural (or Economic, or Metamorphic, whichever it happened to be). You are thoroughly familiar with it, it's right up your alley. Thanks." And I would start sweating. His lecture notes were available, but they were all in shorthand! Many of the students were as old or older than I, but they were wonderfully understanding and sympathetic. Even so, I was nervous. I was learning to swim by being thrown into deep water.

I remember vividly one day when I was halfway through a lecture in Metamorphic Geology in what I thought was excellent form when, to my utter consternation, Dr. Leith slipped quietly into the room and took a seat at the far end of the table. The class was seated around a long table with me standing at one end and Leith seated at the other. I was temporarily spellbound or stage struck. I couldn't go on, but I had to do something. The first part of the lecture had gone very well, so I just gave them the first half of the lecture again! Not one of the boys batted an eye or cracked a smile. They were all good friends and understood the situation. At the end of the hour Leith complimented me on an excellent lecture but expressed surprise that I hadn't covered more ground. I don't believe anyone told him about that for years. On one other occasion he barged into the middle of a lecture in Structural Geology. I immediately told the class that it would be most presumptuous to continue, with the greatest authority on the subject present, and turned the lecture over to him. He never walked into one of my classes again.

My activities were not strictly limited to studying and teaching, and there were other important events that came to pass during this 1907 - 1908 year. I had heard that the possible romance between Julius Warner and Bertha Taylor had been called off or had cooled off, so I had a few dates with Bertha and asked her to go home with me to Plymouth at Christmastime for the Eastern Star Ball, which was the big home-town event of the year. Both of my sisters were sorority sisters of Miss Taylor, so it appeared to be a very good idea. We became engaged during this Plymouth visit!

Early in the second semester, Julius Warner appeared in Madison to write a report on his Canadian activities for Leith, and was assigned to share with me the little corner office off the museum. One day he announced that he thought he would go to the Junior Prom and would ask Bertha Taylor. He was surprised when I told him I already had a date with Bertha for the Prom. Julius and I continued to be good friends, but he started a rigorous campaign to regain the lady's favor and "cut me out." He, of course, learned of our engagement, but that only made him try the harder. Julius had a wonderful way with the women and he had me badly worried. It was a tough time for me, but for my children, grandchildren and great-grandchildren who may read this, it was truly critical. It was to determine whether or not you would ever exist!! Julius eventually started West to a job in Butte, Montana, but he continued his campaign over the long-distance telephone. But as you see, since you are reading this, I finally won.

November 3, 1957

Dear Family,

In 1908 I was promoted to the rank of Instructor in Geology at a salary of $800, minus the last two months, when I again had leave of absence to go into the field. Again I worked for the U.S. Geological Survey in the Lake Superior Region. Early in the summer Leith had me meet him at the Spalding Hotel in Duluth, and we went to call on the chief mining engineer of the Oliver Mining Company, Mr. J. Uno Sebenius. I was to see quite a lot of J. Uno in the years to come. He turned over to us an immense amount of data that had to do with the physical characteristics of Lake Superior iron ores. Leith instructed me to convert all of this data into cubic-feet-per-ton and to stay right there at the Spalding Hotel until I had finished the job.

This was the finest hotel I had ever been in, and the assignment looked pretty soft. Leith left me with the pile of statistics, and I went to work with slide rule and pencil. At the end of the second day, when I had gotten well into the swing of the job, I stopped to do a little forecasting. I found that at the rate I was going, I would be at the Spalding Hotel all summer and well into the autumn! I had to devise some faster way to process the data.

I worked all day trying to devise a diagram (I learned much later the term is nomograph) that would permit me to do the calculations graphically. I always ended up with the necessity of a lot of parallel curved lines, and these I could not draw with adequate accuracy. I went to bed much discouraged, but got up with a better idea in the morning. By evening I had the diagram finished. It really was quite a job of drawing, with parallel or radiating lines, which had to be precisely accurate, crossing it in various directions. It worked beautifully. I finished the job in two days and got back into the field.

But I wasn't through with the "Cubic-feet-per-ton Diagram." In the fall, when I returned to Madison, I showed it to "C.K." (the universal way of referring to Dr. Leith), who was delighted. A few days later he brought an interesting caller to my office: H. Foster Bain, Director of the U.S. Bureau of Mines. Bain was an old friend of C.K. who had just dropped in on his way to Washington from the West. Leith thought he might be interested in my "diagram," and he was. He saw that it applied to all ores and, as he said, even to sand and gravel. He wanted to take it with him, but it couldn't be released without the consent of the Director of the U.S. Geological Survey. He really was quite excited about it.

A short time later I received a letter from Dr. Mendenhall, Director of the U.S.G.S., asking me to publish the diagram at once so it could be used by the mining industry. I sent it, together with a short discussion, to Economic Geology, where it was promptly published. It was immediately republished in practically all of the magazines related to the mining industry, and finally it arrived at its proper place: in Monograph LII of the U.S. Geological Survey, in which my name appeared as joint author of the section on the iron ores.

The diagram kicked up a big storm by J. Uno Sebenius. He really raved about it. In mining iron ore, it is not unusual for one mining operation to extract ore from the property of a neighbor. This ore must be measured and paid for by the trespassing party. The ore cannot be weighed, because it is gone; so the space is measured and the tonnage can then be estimated if the ratio of volume to weight is known. This ratio is usually expressed as cubic-feet-per-ton. The Oliver Iron Mining Company had been using a "shotgun curve" based on the percentage of iron in the ore and had settled many cases with their curve. My diagram used the specific gravity, the porosity, and the moisture content of the ore. The results differed in varying degrees from the figures read from the curve, and that made Sebenius quite angry, but he had to throw his curve away.

One other important event was a visit to Madison by Mr. John E. Hodge of Marquette, Michigan. He was Hodge of Longyear and Hodge, a firm engaged in exploration work and diamond drilling, and he wanted to hire a geologist. He purchased my services, outside of University work, for $1,000 per year, which was a lot more than I had received from the U.S.G.S. With what I received from the University, my annual income was $1,800. Bertha and I figured that was enough to get married on, so we set the date for the coming June!

But Oscar Rohn, General Manager of the Pittsmont Mine in Butte, Montana, wanted a study made of the wall-rock alterations in the mine. C.K. was very much interested in having this done, and a graduate student named C. T. Kirk was to go

Bertha May Taylor,
the beautiful girl I married.

with me to do the job. I was to stay a month and get the work started. Julius Warner was Chief Geologist at the Pittsmont, so once more we were thrown into close association. This time he brought me the blue envelopes at frequent intervals, just as I had delivered them to him three years earlier in the Cobalt District. That was a long month in Butte; but it was over at last, and I hustled back to Madison.

We were married, Bertha May Taylor and I, on June 17, a quiet, home wedding at 1811 Jefferson Street with just the family and a few close friends. We went stealthily to the old Capitol Hotel on King Street in Madison for the night and left for Milwaukee on the eight o'clock Northwestern train the next morning. Spent a couple of days at the Hotel Pfister in Milwaukee, and then left on the night train for Marquette, Michigan, and my new job with Longyear and Hodge.

Mr. Hodge was very wonderful to us. He insisted that we stay at his house, Mrs. Hodge and the two daughters being away at the time. We were in Marquette for perhaps a week. I had a few interesting jobs at the office, which included saving some money for the firm by discovering that samples from a gold claim Mr. Hodge was about to purchase had been "salted," and the claim was worthless. Mr. Hodge threw an evening party at the house for the bride and groom.

My summer job was to be at Crystal Falls, Michigan, in charge of exploratory work on what was known as the Porter Lands. Two brothers named Porter had inherited a large but widely scattered acreage of lands in Upper Michigan, much of it in the iron country. Dr. Leith had examined these lands and classified them on their relative possibilities as iron-ore prospects. A group including Mr. Longyear, Mr. Bennett, Mr. Hartley, and one or two others had agreed to spend $200,000 in exploring these lands and thereby acquire a half-interest in the properties. I was to have charge of the exploratory work, with headquarters at Crystal Falls.

House at
1811 Jefferson Street,
where we were married.

Automobiles were beginning to appear on the scene, and Mr. Hodge thought we would need one on the job at Crystal Falls. He sent me to Milwaukee to look for a suitable car, and of course my new wife went with me. We spent a few days in Milwaukee, but without success. Bertha then went to visit the folks in Plymouth, and I went back to Crystal Falls.

At Crystal Falls I had much to do in getting the job started. This included renting an office, getting drilling equipment onto the job, "spotting" diamond-drill hole locations, and getting the actual work under way.

I scoured the town for a place to live. There was the old Lockwood Hotel, but I just couldn't believe that Bertha would be willing to live there. This young lady had never been away from home in her life! I really had a job on my hands to find a place that she would accept. After looking at all the available rooms in private homes, I was delighted to find a bedroom and parlor in one of the few houses in town that had a bathroom. This was at Mrs. Harbour's, very well located, not too far from the hotel and office. It took much special pleading and the persuasive powers of a new friend, a local attorney and State Senator, Senator Morarity. He really closed the deal for me.

Late in July the most important young lady in the world came up on the night train from Milwaukee, and I met her at Pembine Junction. We walked up the hill from the railway station to Mrs. Harbour's, and I showed her the rooms. Unfortunately they were in the process of being cleaned and "settled," and our arrival was not well timed. Bertha, holding her skirts in a gesture of disapproval, suggested that we leave our bags there while we looked for something more acceptable. I agreed to this, feeling rather sure that these rooms would look pretty good after we had seen the others, and we started on our rounds.

I knew just where to go. We had lunch at the hotel and met Mrs. Brown, the substantial and very nice wife of Mr. Brown, the proprietor. Mrs. Brown put in a good word for Mrs. Harbour and her rooms, and the deal was practically closed. When we returned, everything was spick and span and really looked pretty good. But Bertha, after nearly fifty years, still vividly remembers "that awful pink washbowl and pitcher" (and catcher).

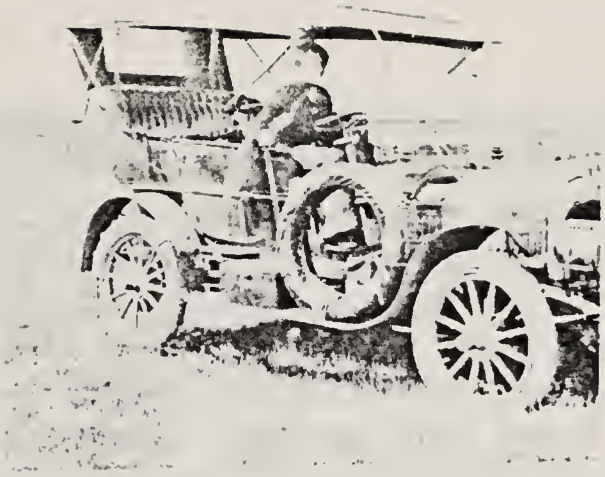
The rooms at Mrs. Harbour's promptly became home - our first home, and we liked it. We had our meals at the Lockwood. The menus were recited orally by the waitress, and at breakfast it was inevitably, "steak, ham and eggs, broiled mackerel and cakes." Bertha had steak for breakfast every morning!

Just as operations appeared to be getting nicely under way, a telegram arrived from Mr. Hodge in Chicago stating that he had purchased an automobile. He instructed me to proceed immediately to Chicago so that I could drive it to Crystal Falls, and to bring Bertha. We started that night and met Mr. Hodge at the Blackstone Hotel in Chicago the following day. We were to leave on the day after that.

I explained to Mr. Hodge that I had only ridden in an automobile once in my life and had never driven one. He said that the salesman who had sold the car lived in Evanston, a suburb of Chicago, and would drive the car that far and show me how. And here started an adventure that I must tell you about. It really was something to remember.

The car was a used Pierce Arrow. In those days Pierce Arrow was Lincoln, Cadillac, and Imperial, all in one package. It was the aristocrat of cars. But this one had surely seen better days. I became well acquainted with it and remember every detail. It had a four-cylinder motor that had to be cranked. It was fired from dry cells. The headlights burned gas from a tank on the runningboard. It had a "four-man top." The steering column was vertical, and the wheel was like a high piano stool, one of the old rotary kind. The differential was offset from the centre line of the car because it drove through gears at all speeds! It was impossible for two passengers to converse without first stopping the motor. The tires were "clincher," and to change a tire one changed the tube after prying the casing from the rim with "tire irons." They carried 100 pounds of air, and this had to be pumped into the tire by hand. But the gearshift was on the steering column just below the wheel, and in this respect the old bus was way ahead of its time.

We finally got started for Evanston in the middle of the



The Pierce Arrow Car!

afternoon. I had persuaded Mr. Hodge not to close the deal until we arrived at Evanston. I rode with the driver and watched every move, while the Boss and the Wife shouted at each other in the back seat. I noticed that the driver had a curious practice of snapping his foot off the pedal whenever he wanted the clutch to operate; sometimes he would do this repeatedly. Finally, on our way up a hill, the car stopped with the engine still going. The driver got out of the car, opened up the hood, and with his penknife inserted a generous amount of road grit into what I correctly presumed was the clutch. I told Mr. Hodge that the clutch was evidently no good and not to take the car. The driver said all it needed was a new leather lining an that he would drive us to Kenosha and have it relined at the Rambler plant. So I relaxed, and we went to Kenosha and foun a fairly good hotel.

The car was ready to go the following afternoon. One o the men who had worked on it lived in Milwaukee and offered to drive us that far and get the clutch well broken-in. I watch him drive into Milwaukee and also watched a great cloud of steam boil out of the front end as we arrived. The radiator had developed a very bad leak, but a repair shop was persuade to fix·it overnight.

I didn't sleep well. I had visions of starting north from Milwaukee, with my hands on the steering wheel, headed for th wilds of Upper Michigan. But fortunately the man who had soldered the radiator lived in North Milwaukee, bless his hear and was glad to drive us that far on our way. We reached North Milwaukee and parted from our driver number three. I slid over into the driver's seat, pushed up the throttle lever, and we were off.

I hadn't even learned to turn a corner, and I soon foun it wasn't like steering a bicycle that straightened itself out aft making a turn. On the first turn the car just kept turning, an I almost landed on a front lawn, but I learned quickly about th

I recall my delight when I first changed gears on a hill and shifted back again without any trouble.

Please understand, this was before the days of hard-surface roads or road maps. One proceeded either by knowing his way or by frequent inquiry. All horses were afraid of motor cars, and usually the driver alighted and held the horse's head until the automobile had passed.

There were no filling stations or garages. Most towns had places that had been made into makeshift shops for car repairs and servicing. There were no gasoline pumps for filling car tanks. Gasoline was drawn from a barrel into a container and poured from that through a funnel into the car. In most places it was illegal to handle gasoline after dark because of the fire danger from lanterns.

We pushed northward from Milwaukee at sufficient speed to arrive at my old home town of Plymouth late in the afternoon. We were greeted with enthusiasm by an excited Mother and Dad and spent the night there. In the morning Mother gladly accepted an invitation to ride with us as far as Green Bay, where she could get a train back to Plymouth the same afternoon. We made good time northward, probably averaging at least fifteen miles an hour, and delivered Mother safely at the station in time for her train.

We then drove into town and found a place where we could have the car serviced. This accomplished, we backed out of the place and were on our way to Menominee; but Mr. Hodge, riding with me, turned to speak to the back-seat passenger, and in doing so accidentally kicked the oil-gage pipe out of place. A fountain of green oil squirted over his shoes and trousers. We drove back into the so-called service station for repairs of the oil tube and then found that the radiator was leaking badly again, so we spent the night in Green Bay! We just couldn't get out of a town with that car!

Next morning we were on our way through wilder and wilder country to Menominee and points north. We made it, had lunch in Menominee, and continued on over so-called roads to Iron Mountain. We had a little delay in Menominee when we drove into a made-over store for servicing. In spite of a man on each side of the doorway, one of the widely protruding brackets of the "four-man top" caught the heel of the door, wrecking the door and breaking a part of the bracket. So we had something fixed in Menominee! Shortly afterwards we continued on our way to Iron Mountain, arriving in time for a late dinner. Iron Mountain boasted of a garage operated by Charlie Rauer, a name I shall always remember. We left the car at

Charlie's place for a thorough lubrication and general servicing. In the morning we started on what was to be the last leg of our journey, Iron Mountain to Crystal Falls. And then we found that Charlie's lubrication was indeed thorough!

Everything went fine until we started down a long hill known as the Granite Mountain Hill. I pressed down the foot brake to reduce speed and nothing happened. I pulled on the handbrake and we continued to accelerate. I couldn't shift into low because of the limitations of the gear system. Downhill we went at increasing speed. Coming up was a sharp left curve which could not be taken at that speed, so it looked like a swell wreck ahead. But at the curve there was a straight-ahead opening in the fence, and tracks through the grass where a car might go. There was no choice, so we bumped and bounced across the roadside ditch and found ourselves scooting along a narrow passage between huge stacks of lumber. At the far end was an enormous pile of wonderful, beautiful sawdust - as big as a mountain - and that was where we softly stopped. Wow!! That was a breath-taker! We had lots of luck.

Mr. Hodge negotiated a deal for assistance with the crew at the sawmill. The brakes were washed out with gasoline. It appeared that Charlie Rauer had been too liberal in his lubrication of the rear wheels and had gotten oil into the brakes. We finally arrived in Crystal Falls without further adventure.

We had left Chicago Monday afternoon, spent that night in Kenosha, Tuesday night in Milwaukee, Wednesday night in Plymouth, Thursday night in Green Bay, Friday night in Iron Mountain, and arrived at our destination in Crystal Falls Saturday afternoon! Today, with a modern car and over paved highways, the trip would take one day.

Mr. Hodge left for Marquette, and I spent about twenty-four hours soaking my arm in hot boric acid solution, as there was a red line running up my wrist and arm - septicemia from a spot I had pinched while pumping up a tire in Plymouth.

Monday we initiated the car in the work it was to do by leaving for Alpha with a diamond-drill crew. We went along fine until we started up the first hill, and the clutch began to slip. We crawled up to the top and appeared to have made it. I set the handbrake and got out to look at the clutch. The car started to move slowly backward. Everyone got out and we tried to hold the car, but it was too heavy, and there was nothing to scotch the wheel with. So down the hill she went, smashing through the brush and the fence and ending up in the woods.

Charlie Rauer had really done a job. He had filled the transmission and the differential with cylinder oil, which had worked into the clutch and the brakes. With the three huskies of the diamond-drill crew, I had a lot of help. I got some clay into the clutch, and with the help of a rope we drove back onto the road. One of the crew who had never had experience with a gasoline engine roared "Hey! Shut her off! There's something besides steam coming out of that exhaust!"

We could make the clutch work briefly with applications of gritty clay from the road, but we had no brakes. On a long hill that we had to ascend, two of the men carried a small log and dropped it behind the rear wheels when I had to stop for more clay. To descend the hill, we used a heavy rope that we had brought for the drill. With this, we snubbed the car down the hill from tree to tree. We finally arrived at the drill camp, and here the boys really took it apart; they washed out the oil and replaced it with grease, thus ending our troubles with Charlie's cylinder oil.

We settled down to living in Crystal Falls in the rooms in the home of Mrs. Harbour. We had our meals across the street at the Lockwood Hotel. The summer of 1909 was a busy one with diamond drills to look after in various locations and frequent trips to Marquette and Minneapolis. On most of these trips Bertha went with me. We returned to Madison in the autumn in time for the opening of the fall semester. This year I was an Instructor in Geology at $800, less whatever leave of absence I took in the spring to get an early start in the field.

When we returned to Madison we lived with Father and Mother Taylor at 1811 Jefferson Street until we found and rented an apartment in a new apartment building near the University on Howard Place.

There were no important changes in the University program of teaching. The one important event came in the spring of 1910 when Leith asked me to go to Cuba with him as his assistant in connection with litigation which the Spanish American Iron Company was having in the Cuban courts. We left for Cuba in May. We went by boat from Key West to Havana, and I vividly remember a beautiful display of Halley's Comet seen from the boat before we left Key West.

The job was very interesting. It appeared that in Cuba the old Spanish mining laws divided all occurrences of ores and minerals into certain classes. In "denouncing" areas for mining purposes, the ores being acquired had to be properly classified under the provisions of the law. The Spanish American Iron Company had secured their title to extensive eastern and central iron ore areas under what they thought was proper designation, but an alert individual with a sharp lawyer as a close relative had noted the unusually high moisture content of the ores being mined. He said that this proved them to be "bog iron ores," and he blanketed the areas with claims under this new classification. It was up to the S.A.I. Co. to prove that these were not bog ores, and in order to do this it was necessary to demonstrate their actual origin.

When we arrived, I sampled the ores in detail from top to bottom. Our data clearly demonstrated that the ores were the residual product of weathering of the rock. The S.A.I. Co. won their case in all the Cuban courts and retained title to their extensive lands. Leith and I jointly published a paper on the genesis of the ores. We returned by boat to New York, and my first visit to that city was exactly like that of any immigrant from across the water. It was one of those "never-to-be-forgotten" thrills.

I returned to Madison late in June, just in time to pack and depart with Bertha for the Lake Superior country. This time we went to Marquette and had rooms at Mrs. Probst's rooming and boarding house. This was an interesting place, largely a refuge for people with hay fever who could escape that malady by spending the summer in Marquette or other northern points. I was on the go much of the time, looking after the widely scattered exploration work. Two important events should be noted, and I think each is a good story.

I had been drilling a group of Porter Lands near the town of Amasa. We had several holes in hard, barren, iron formation, and then by means of a magnetic or "dip needle" survey I found a sharp bend in the iron formation which indicated a pitching fold and a likely place for ore. I had drilled a shallow, inclined hole and found leached, wormy iron formation. This, I believed, indicated that ore would be found below. I started a vertical hole from the same point to intersect the iron formation at greater depth and was then called to Duluth to a meeting of the group financing the job.

Mr. Longyear, Mr. Bennett, and Mr. Hartley were at the meeting. They had spent $100,000 and found no ore. They could stop and take a quarter interest in the Porter Lands, or they could spend a second hundred thousand and get a half interest. I pleaded most earnestly with them to go on. I explained that the work thus far had been largely directed to finding structural conditions where ore would occur and that we were now ready to find the ore. I told them that we were sure to find ore in the vertical hole just started at Amasa and that I would risk any reputation I might have in the future on that statement.

As we drove out to Mr. Hartley's lettuce farm for lunch, I remember that he said, "Well, all we are risking is $100,000, and Mead is risking his reputation. Let's go ahead."

I was pleased with that decision and got back to Crystal Falls the following morning, which was Saturday. I was at my desk in the little office, scanning my mail, when the man from Lerch Brothers Assay Laboratory stepped into the doorway and tossed a bunch of assay cards on the desk. I glanced at the top card and ran to the door to call him back. I told him they were not our cards, that he had made a mistake. He said, "Hell, they gotta be yours. We didn't have any other samples yesterday. Don't you like the stuff? Highest assays we've had in this district."

I sat down and looked them over and just about passed out. I had never had such a wonderful shock. I couldn't believe what I saw. One hundred and twenty feet of high-grade Bessemer ore! I had never heard of any ore like that in any mine in the district. I called Mr. Longyear on the long-distance telephone, and he passed the news on to the other backers of the enterprise.

The following week Mr. Hartley, by virtue of being president of a little logging railroad in Minnesota, borrowed a private railway car from the Superintendent of the Duluth, South Shore and Atlantic Railroad and brought the whole bunch to Crystal Falls. The private car was switched onto a siding near the station, and a big time was had by all for a couple of days. I don't believe there was a drop of liquor on the car, because they just weren't drinking people, but they had a wonderful time without it. Hartley was a great joker and organized a mock hearing to find just when that ore was drilled. Had the drill men in to testify. He pretended to suspect that the ore had been found before I risked my reputation in my plea in Duluth, so he set up a thorough investigation. I was cleared of the charge, and he insisted that Mr. Longyear raise my retainer.

The second discovery came late in the summer. We found some ore on the Porter Lands while drilling near the old Alpha Mine. This eventually developed into the only open-pit mine in the Crystal Falls and Iron River Districts.

While we were drilling on the Alpha ore body, I thoroughly explored a swamp area to the southeast and found a very interesting outcropping of rock. It was surprising to find this outcrop in the swamp, at least a quarter of a mile from any other rock exposure. But the interesting and important thing was the story it told. The bedding or stratification was crossed at right angles by the cleavage, and this relationship of bedding and cleavage told a great deal about the folds in the rocks that were hidden below the surface in the low, swampy area. It had generally been assumed that the iron formation of the old Alpha Mine continued in a straight course to the old Mansfield Mine, but this one outcrop told me that this assumption was not correct and that there was a sharp bend or fold in the formation, carrying it back under the swamp and providing an ideal structure for the development of iron ore.

This area which looked so desirable to me was not on the Porter Lands but was owned by a Mr. McGovern of Iron River. I persuaded Mr. Hodge to wade out through the swamp and mosquitoes with me to see this revealing outcrop, and then tried to explain to him why it was so important. I wanted to go personally and secure an option on the lands, but Mr. Hodge said no. I went to Minneapolis, Duluth, and Chicago, and at long last succeeded in selling the idea. But by that time the concern about the area had leaked to one Ben Neeley, a sharp trader in iron properties in Crystal Falls, and he had beaten us to the option. The result was that Mr. Neeley had to be paid a bonus of $25,000 for the options! I wished that I had had nerve enough to go directly to McGovern myself and either made or saved the $25,000.

We found a very good ore body on the land and opened up a mine called the Judson Mine. I had assumed, when I heard the name, that Mr. E. J. Longyear's middle name must be Judson; one day in his office, when I saw him sign a paper as Edmond James, I told him what I had assumed about the name of the Judson Mine. He laughed so hard that he couldn't talk and rushed me into Mr. Hodge's office and called for Mr. Jewett and then explained what he thought was the joke of the century. The mine had been named to honor me, and I had never been told!

The diamond drilling of the E. J. Longyear Company - here, there, and everywhere - kept me pretty much on the go. At about this time (the exact year is not important), Longyear and Hodge became the E. J. Longyear Company, with headquarters in Minneapolis. Mr. Hodge and his family moved to that city. This meant that I had frequent week-end trips to Minneapolis, particularly after I later became a director of the company.

I returned to the University in the fall of 1910 with a promotion to Assistant Professor at a salary of $1,000 on a

Bertha and Warren J.,
Crystal Falls, 1911.

two-thirds time basis. I actually did full time for the University, but since I was earning money as a consulting geologist in addition to my University pay, it was assumed that I could get along with less. This attitude continued to prevail in the Geology Department as long as I was there. I had to earn enough money in the summer to afford to be a professor in the winter. I was greatly interested in the purely scientific aspects of geology and had a lot of ideas about research that should be done, but I had to decide between a career as a research scientist and teacher on a starvation income or a combination of teaching and applied geology, with a better income.

Another factor was the lack of funds for research. There were no grants for research from government or private sources. Some years later, after Max Mason became President of the Rockefeller Foundation, a move was underway to make a grant of funds to the University to establish and support an Institute of Earth Sciences. This looked wonderful until a politically minded member of the Board of Regents sounded off with the astonishing cry that the "Wall Street Octopus" could not buy control of the University. Under his misleadership, the Regents passed a resolution refusing all future grants from "Institutions." This action was rescinded many years later, and the University has since been happy to accept handouts from any source.

But I was destined to a career in teaching and applied geology, and I have had no regrets. I have had a wonderful life and would be glad to repeat it if I had a chance. Even the course in Electrical Engineering proved to be a good preliminary to my later activities. The basic subjects in engineering were most valuable; and when I later sat as geologist with the consulting boards of hydroelectric projects, it was pleasant to understand what they were discussing.

The spring and summer of 1911 contained no items of special interest that I recall. Bertha went north with me and

The Apartment House,
Jefferson and Van Buren
Streets;
We lived here about
ten years.

stayed in Crystal Falls and Marquette, and I did a great deal of chasing about from one drilling operation to another.

I returned to the University in September as Assistant Professor, a rank I was to hold for the next seven years. My salary was raised to $1,200, which was a help, as 1912 turned out to be a more expensive year. In September we moved into a new home at 922 Van Buren Street, in the part of Madison known as Wingra Park. This was the lower or first floor of a duplex house that Father Taylor had built. Bertha's father and mother moved into the second-floor apartment. We were to live here until we moved into our own house, which we built at 2113 Adams Street and moved into in June of 1922.

That September I had my first brush with engineering geology, but only as an observer. A flood on the Black River had caused a dam failure and washed out a large part of the city of Black River Falls, and I went to observe. The engineers had neglected the geology of the dam abutment, and I learned a lot.

In January someone in the heating department of the University turned the wrong valve and delivered full boiler-pressure of steam into the heating system of Science Hall. The radiator in my office exploded with rather devastating results. I had been out of the office at the time and was just about to enter the room when it happened.

The door opened inward; as I started to push it back, it erupted violently against me, breaking my glasses, bumping my head, and knocking me to the floor. There was a terrific noise within, followed by the sound of breaking glass. It required only a moment to get back on my feet and find out what had happened, or at least to guess that there was a lot of steam roaring into my office. It took some time to get the valve closed so that the damage could be surveyed. The radiator to the left of the door had split from top to bottom, slamming the door shut and discharging a sheet of live steam across the doorway. Windows in the office had been blown out.

I thanked Bill Hotchkiss in the next office for having called to me as I passed, to engage in a bit of the usual banter. Had I been in the office I would have been cooked. There would have been no chance to escape. My fur-lined overcoat, hanging at the far side of the room, actually was cooked and was ruined - stiff as a board, after it dried. I have before me the statement of damages sent to Dr. H. C. Bumpus, Business Manager, on February 2, 1912. It amounted to $132, which included $60 for a new fur-lined overcoat! The total amount was allowed. I saved the University a lot of money by not being in the office.

This was really a busy year, and it had started with a bang. Dr. Leith and I had set out to write a text book on metamorphic geology, of course with emphasis on the "quantitative aspects." A lot of work was involved, and C.K. was a difficult taskmaster. He would breeze through the dictation of a chapter or two with all figures and data left blank for me to fill in. I couldn't write a paragraph to suit him until I learned to imitate his cryptic style. I could then get by with most of what I wrote. But it was a terrific job. I swore that I would never write another book, and I didn't. This book was finally published in 1915.

I was back on the job for the E. J. Longyear Company early in the summer with the usual amount of chasing about in the iron and copper districts, principally in the Lake Superior Region. In July a new problem in exploration came to the Company. This turned out to be of great importance to me, although I did not realize how important at the time. The Sawyer and Austin Lumber Company of La Crosse, Wisconsin, owned a small acreage of mineral rights in Arkansas and desired an examination of the lands and a report on any valuable mineral deposits that might occur there. They had heard that aluminum ore, bauxite, was being mined in that part of Arkansas by the Aluminum Company of America.

With Julius Segall to assist me, I went to Arkansas in July of 1912 and completed the field work before the middle of August. The report is dated August 27. This was my first professional report. In my file of over one hundred reports on consulting jobs, the Sawyer and Austin report is numbered No. 1. I took great care in every detail of its preparation and had it bound in flexible black leather, with the title in gold letters stamped on the cover! It really looked most professional, and of course it was!

This was my first experience with Arkansas bauxite. I came away with the feeling that the accepted geological theories explaining the origin of the bauxite were wrong. To me it looked like the Cuban iron ore in everything but color and composition. Like the Cuban ore, it also appeared to be a residual product of weathering, but from a very different parent rock, high in alumina and low in iron.

I met a grand old gentleman, Colonel Gibbons, Superintendent of Mining for the Aluminum Company, and got off to a bad start with him by suggesting that the bauxite had not been formed by hot springs on the sea bottom but by ordinary weathering at the surface. The hot-springs theory was Dr. Branner's, who discovered the bauxite when he was State Geologist of Arkansas. (He was later made president of Leland Stanford University.) Gibbons was a friend and great admirer of Branner, and I had gotten off on the wrong foot by proposing a theory that disagreed with Branner's.

The job in Arkansas was important, but far from being the most important job of the summer. We were expecting the arrival of either a son or a daughter sometime in August. Bertha was somewhat nervous about my absence in Arkansas, but I got back home to Madison with time to spare. For some strange reason or combination of ideas we decided that we wanted to have the baby born at home and not in a hospital. Miss Haswell, an experienced graduate nurse who lived a couple of blocks down the street was engaged, and would come at any time we called her. We were to call Miss Haswell, and she would call Dr. Head when it was time.

At long last we decided one morning to call Miss H., who came sauntering up the hill some time later. She sized up the situation and shifted into high gear, called Dr. Head, and had.everyone jumping. Dr. Head decided he would have to use instruments and called an anesthetist, Dr. Bowman. Things had been underway for some time while I waited. Then Dr. Head said he needed another pair of hands, and asked me to help, expressing the hope that he wouldn't have to kick me under the bed. So I was scrubbed up, robed and masked, and served very definitely on the reception committee for our first son, Warren, nine and one-half pounds of him, yelling lustily. Everything went fine, and it took me some time to realize that I would never again be high man on the totem pole.

Lots of things had come to pass in this busy year of 1912, and there were more to come. In November I had a telegram from a Mr. A. V. Davis of Pittsburgh, asking me to come there at his expense for a business conference. The name rang no bell with me, but after a little research I found that Mr. Davis was President of the Aluminum Company of America. So I was very glad to go to Pittsburgh to confer with him.

I found his office in the Oliver Building and was ushered into the presence. Waded across a beautiful rug to shake hands with a very important-looking, rotund little man who arose from behind a beautiful mahogany desk. I noted that lying on the desk was my report on the Sawyer and Austin lands. I was glad that I had made it look attractive with the leather cover and gold stamping. It blended into the mahogany environment perfectly.

After we were seated, Mr. Davis asked, "Did you write that report?" I told him that if it was the report I thought it was and my name was signed to it, I had written it. He said he thought it was excellent and told me that his company owned about 16,000 acres of land in that same general area. Then he asked if I would undertake a similar investigation of all of their lands. I told him that I thought it could be arranged. He asked how long it would take and what it would cost. I said I hoped he didn't seriously expect me to answer those questions. He said no, he didn't, and would have been disappointed in me had I tried to do so.

Mr. Davis then went on to tell me why he needed the report. He said that Arkansas had heard that Minnesota and Michigan had begun to tax iron ore in the ground and that Arkansas had consequently decided to do the same for bauxite. He said the Arkansas assessors had arrived at the value per ton of bauxite by buying an aluminum utensil in the hardware store, taking it to the drugstore to be weighed, looking up in the encyclopedia to find the percentage of aluminum in bauxite, and then most probably having the local school teacher calculate the value of the aluminum in a ton of bauxite. Then, Mr. Davis said, the assessors took a U.S. Geological Survey report on the geology of the bauxite district written by Dr. Hayes, who had guessed at the tonnage of bauxite in the district, and from all this wonderful data and calculating had placed an immense tax on the holdings of the Aluminum Company.

A lawsuit was already in the making between the Aluminum Company and the State of Arkansas, and the Aluminum Company must know how many tons of bauxite it owned. Davis said they had no estimate whatever of the tonnage of bauxite on their lands. He wanted me to agree to serve as an expert witness in this trial and to be present throughout the trial as an advisor to the attorneys! I told him that court work would command a higher per-diem fee than field work, and he agreed to that.

I asked that a topographic map of the entire area be prepared as a base for our field work, and they arranged to send five transit-stadia parties into the field immediately. I returned to Madison to set about organizing the necessary crews for the geological work. We got at it as rapidly as possible, and it really was a whale of a job. There was an immense amount of test-pitting, trenching, and drilling to be done, as we had to get the area and thickness as well as the composition of each ore body. The total vertical footage of drill holes and test-pits was about 35,000 feet - nearly seven miles! But the job was finally finished and the report delivered, bearing the date of August 27, 1913, almost exactly one year from the date of my first meeting with Mr. Davis.

Shortly after the report was delivered, I was told to be ready to proceed to Little Rock for the tax case hearing. This looked both interesting and profitable, and I consulted with the Dean of the Law School on the rights and duties of an expert witness in court. Then came a wire saying that I would not be needed at the hearing, followed by a letter explaining that my report and tonnage estimates had been submitted as part of the pre-hearing stipulations, that the state had done their best to find holes in it but had accepted my report and tonnage figures without objections, that the only question before the court was the method of computing the value of a ton of bauxite in the ground. So I had worked myself out of a darn good job. But this was by no means the end of my work for the Aluminum Company.

It would be wrong to leave the impression that the job consisted only of measuring the area and thickness of the bauxite deposits and the calculation of the tonnage from the dimensions. It wasn't quite as simple as that. We had to find the ore bodies, which were concealed by soil and by deposits of sand and other sediments, sometimes many feet thick. To do this, many test-pits had to be dug and many exploration holes drilled.

In order to search intelligently, it was necessary first of all to understand the origin of the bauxite. The generally accepted theory involved hot springs emerging on the bottom of the sea, carrying aluminum salts in solution. These salts were then precipitated in some manner, perhaps by cooling or reaction with the sea water, to form the bauxite as a chemical sediment. Some of the bauxite was "pisolitic" like closely-packed tiny marbles, and it was thought that these little balls were formed by being tossed about in the hot-spring currents. Dr. J. C. Branner, who had discovered the Arkansas deposits when he was State Geologist of Arkansas, had adopted and enlarged on the hot-spring theory.

One of the finest gentlemen I have ever met was Colonel Gibbons, Superintendent of the operations for ALCOA. Colonel Gibbons was a private in Lee's Cavalry, the famous Cavalry of Virginia, in the Confederate Army. His titles had been won as a Confederate veteran, and before he died he was a general. He was a great admirer and friend of Dr. Branner. Unfortunately I had told him of my scepticism about the hot-springs theory at the earlier time of my examination of the Sawyer-Austin Lands, and he had promptly labeled me an ignorant smart Yankee. He treated me with politeness but not with southern hospitality! He had instructions to expedite our work, but he had no enthusiasm for the job.

It seemed to me that the bauxite was the result of natural decay, or weathering by the natural agencies of water and air. There is no rock that can resist this persistent destructive effect. Leith and I had found that the Cuban iron ores had been formed by weathering; here in Arkansas the same kind of process, working on a different kind of rock, had made bauxite. The weathering processes working on a mass of rock produce soluble products which are dissolved and carried away and insoluble products which are left behind. Iron ore and bauxite are insoluble. It's just that simple! But it was a new theory in geology, and I had included the story as part of my report.

This report, by the way, was the longest professional report I have ever written: over 200 pages and with about 80 maps, called "Mead's Bible" in the ALCOA office in Arkansas. Mr. E. S. Fickes, Vice President and Chief Engineer of ALCOA, was much interested in the origin of the bauxite and suggested that I publish that part of my report. I was pleased to do this and a little surprised, because mining companies usually frown on publication of reports.

The paper on the "Origin and Manner of Occurrence of the Arkansas Bauxite" finally appeared in Economic Geology in 1915. I sent a reprint to Dr. Branner, and he did a very thoughtful thing, for which I was most grateful. He wrote a complimentary letter, agreeing with my theory of origin, and sent the letter to Colonel Gibbons to be forwarded to me. That did it! Colonel Gibbons wrote immediately and was fearful that I wouldn't realize and appreciate the very great compliment I had had from a great man.

From that moment on, the Colonel and I were warm friends. On my next trip to Arkansas, I was met at the station by the Colonel - not in his automobile but with his carriage and coachman! I was taken to his home as a houseguest, the first Yankee ever to enter his door. He later came to Madison to visit me, and we took a trip together to Colorado. He really was a grand old Rebel. And my very pleasant friendship with the Colonel was due to the thoughtfulness of Dr. Branner. Not long before the Colonel died he sent for me to come to Arkansas, just for a visit, which I did.

The University year of 1912 - 1913 went on much as usual. I was having a good time developing the laboratory courses in metamorphic and structural geology and devised and published a circular slide rule for converting analyses of ores and rocks from oxides to minerals, which statement probably means nothing to you!

In May of 1913 I went to Tennessee for the Aluminum Company to examine fluorspar mines and prospects. This mineral is essential in the aluminum industry and is mined in Illinois, Kentucky, and Tennessee. This was the beginning of several years of exploration for ALCOA in that region. Exploration continued as usual in the various Lake Superior districts.

The College year 1913 - 1914 brought nothing particularly new in the way of University duties. I was reappointed as Assistant Professor for the usual three-year period, and my salary was raised to $1,400. The summer of 1914 was a busy one in the north country. We examined and reported on the Seymour Coleman Lands of northern Michigan and two other tracts. This involved a lot of field work in wild country.

In the summer of 1914 my father and mother did a very sensible and wonderful thing. They sold a lot off the rear end of the Plymouth property and in this way financed a trip to Europe. The American Medical Society, or the Society of Physicians and Surgeons, chartered a ship for a European cruise and took Father as honorary legal adviser. This was arranged by their good friend and family physician, Dr. Edward Felter. They had a wonderful time and continued to enjoy that trip for the remainder of their lives.

Just before they were to return, England got into World War I. The ship that was to have brought them home was withdrawn from service by the Admiralty. The steamship company took care of the party in Liverpool while another ship was prepared for their return. Of course no one had anticipated this shift in ships; but when Father and Mother went aboard, a mystified Purser awaited them with a letter properly addressed to them on the boat they were boarding! My sister Arlisle had written the letter in her husband's office while she waited for him on a Sunday morning and made a lucky error in the name of the ship. All right, call it extrasensory perception if you like.

The 1914 - 1915 record shows that my University salary was raised one hundred dollars to $1,500, and this was of course most welcome. But Bertha's "Line-a-Day" book has a note on March 16, 1915, saying "had salary cut in two." This must have been the E. J. Longyear Company stipend. There was also a note that I paid $73 in income tax - state tax, it must have been.

Metamorphic Geology was published in 1915, and in this connection I had an interesting week in New York for a final check of the page proofs. On the return from New York I traveled through Canada and stopped in the Sudbury Nickel District, where most of the nickel ore comes from. I had never been in that district. A former Wisconsin law student named W. E. Smith, who had served as compassman with Leith's summer field parties, was living in Sudbury and he was trying to make a living as a dealer in mineral claims. I looked up "Tum Tum," as he was called, and asked him what he thought of the exploration possibilities in the district. He thought they were fine. When I asked him about property ownerships he said he had a map showing all of them and took me to his cottage to see it. I was astonished to find that much of the explorable ground was "Crown Land," which could be had by staking it, making a discovery, and doing the necessary assessment work. I asked Smith if he would bring his map to Minneapolis and consider taking a job to stake claims and look after ownerships for a nominal salary and an interest in any profits. He indicated an enthusiastic willingness, if his expenses were paid.

I returned to Minneapolis and sold the idea to Mr. Longyear, Mr. Bennett, Mr. Hartley, Mr. O. B. Warren, and one or two others. They arranged to put up $200,000 for an exploration campaign. We sent for Smith, who came on with his map. I indicated the claims we wanted him to stake, and he returned to Sudbury to do so. With Hugh M. Roberts as chief assistant, we assembled a field party and drilling outfit and started the work of mapping and drilling.

This exploration venture was pleasantly successful, as we found what was probably the largest body of nickel-copper ore in the Sudbury District. The ore was traced without a break for about two miles and had ample depth and thickness.

One forty-acre claim covering one of the richest parts of the ore gave us a little trouble which took us into the Canadian courts. We called this claim the Edison Forty because Thomas A. Edison, many years earlier, had explored here for nickel to be used in his famous storage battery. He had selected this claim on the basis of a magnetic survey and had attempted to sink a test-pit or exploratory shaft down to the ore through the cover of nearly two hundred feet of glacial sand, gravel, and boulders. The shaft penetrated to within a few feet of the ore and was abandoned because of quicksand.

I wrote to Mr. Edison about our discovery of ore in the area of his earlier endeavors and suggested that it would be interesting to see the relationship of the ore to his magnetic survey data. I was in New York a short time after writing the letter and called his office in East Orange, New Jersey. His secretary, Mr. Mannegold, said Mr. Edison did not like to use the telephone but would be delighted to have me call on him at the office. I went over there the next day, a very hot one, and was directed down an alley between buildings at the plant and told I would find Mr. Edison testing phonograph records. I found him on the open porch of a small building, sitting in a straight chair before a wooden table on which was a phonograph with a huge horn. Mr. Edison, in a collarless white shirt, greeted me with a beaming smile and dumped some materials off a second chair so that I could sit down. I had just started to introduce myself when a breathless secretary arrived and shouted at me, "You will have to yell as loud as you can because the old man is very deaf! He won't use a hearing aid!"

I spent a most interesting afternoon visiting with Mr. Edison. The magnetic survey records had been lost in the big fire that had destroyed part of the plant, including his office, but he had many other things he wanted to discuss. He was a genial, friendly old gentleman.

When the search for nickel ore was initiated, we hoped to find a body of ore that could be sold to one of the two nickel-producing companies then in operation. The ore body we found was much too big for either of the companies to purchase at any reasonable price, so it lay undeveloped for a number of years. Eventually it was sold and became the basis for the development of a third producer, Falconbridge Nickel.

Smith made a lot of money from his share and moved to Duluth. In 1929 I was most pleasantly surprised with a check for $30,000 as my share in the enterprise. I had left the Longyear Company several years earlier and had forgotten that Mr. Bennett had told me that they were setting aside for me a certain interest in any profits, as a reward for bringing them the opportunity.

This check came early in 1929. What should I do with it? I called in a good friend, Harold Stafford, who was agent for the Northwestern Life Insurance Company, and asked him what he could sell me for $28,000, the sum I would have after income tax. He said I was a fool to buy insurance when I could double the money in the stock market in a few months. I remember that I told him I didn't think stocks and bonds were worth what people were paying for them. So he sold me a single payment, ten-year endowment policy, and I left for a summer in the Far North. When I returned late in the fall the big financial crash of 1929 had occurred, but I had my insurance policy! Whatever happened to all that money? Well, I'll tell you. When the policy matured, in 1939, I just left it with the Company. It paid dividends every year, and when I retired we converted it into an annuity. It will pay us an annual income so long as either survives. So, I am glad that I stopped in Sudbury on my way back from New York in 1915.

The story about Sudbury Nickel was a digression from the account of what happened in 1915, so we must get back to that year and finish the story.

We had been expecting the second baby sometime in November. At the suggestion of our new doctor, Joseph Dean, we had made arrangements to have the event at the Stover Lying-in Home, on Wisconsin Avenue. On November 18 (1915) a hurried afternoon call from Bertha brought me home in a taxi, in which we immediately departed for the baby hospital. Things were going to happen rapidly. Dr. Joseph Dean could not be reached, so his younger brother, Dr. James, substituted for him. Bertha had insisted that I be on the reception committee, as when Warren was born, so all rules were broken and I was outfitted with robe and mask.

Everything moved along smoothly and rapidly - too rapidly, I guess. The baby was delivered promptly, and the doctor and nurse were greatly concerned in trying to get the baby to breathe. I was holding the mother's hand and following her pulse, which had been fine and normal until the delivery, and then had suddenly gone thin and "thready," so that I could hardly feel it.

I called to the doctor to never mind the baby but look after the mother and that I was not a medical doctor. The doctor and the nurse got very busy with hypos and other things; it was clearly an emergency. They got help for the baby but could not get breathing started, and we didn't have a baby.

This all happened about six o'clock in the afternoon and they didn't attempt to move the mother from the delivery table. She spent the night right there and I spent the night on my knees at the bedside, kidding her along. She was aware of what had happened and apparently had quit helping. In the morning she was all right and out of danger, but Dr. Jimmie said that if I had not been on the job he feared that we would have lost both of them.

Later in November, Mr. Davis of ALCOA wanted me to go to southern Utah to examine an alunite mine. I took a recent geology student named Harmon Lewis as my assistant, and Lewis afterward continued with the Company for many years in various capacities.

November 2, 1958

Dear Family,

I believe I told you that in November of 1956 I had a cataract operation on my right eye. Since then I have had two very good eyes but I had to use them one at a time! No binocular vision. Next week I will have the cataract removed from the left eye and when that one settles down I should again have excellent binocular vision.

In December of 1915 I was called to the telephone by President Van Hise. I should explain that Dr. Van Hise was at that time one of the leading geologists of the country as well as President of the University. He was an authority on Lake Superior geology, by that I mean the vast Pre-Cambrian area known as the Lake Superior Region. He had published a number of important volumes on the geology of that area but had never served as a consultant.

He told me that the Pittsburgh Steel Company had asked him to aid them in a geological problem at their Rowe Mine in the Cuyuna District of Minnesota, that he was greatly tempted to "have one more fling" at field and underground geology and would take the job if I would agree to go with him as his assistant. It was a great privilege for a youngster like me to spend a few days working with Van Hise so I gladly accepted. We were met at Duluth by the President of the Company and a private railway car loaned by the railroad superintendent. This car was parked in the railway yards at the Rowe Mine and we lived in it during our stay. The geological problem was interesting and we wrote the report jointly but the important thing was to have these days of close association with a really great man. It was an important item in my education.

The problem of the Panama Canal slides was receiving much attention in the press and among engineers at this time. The idea of a canal across the Isthmus was an old one. The Spaniards and the Portugese had been thinking about it as early as the time of our Revolutionary war. France was active with the first Panama Canal Company and had made an actual start in the early 1880's but abandoned the project in 1889. A second Canal Company resumed work in 1894 and did a lot of digging but finally had to quit. I believe it was yellow fever that licked them. The Spanish-American War revived interest in the Canal. President Teddy Roosevelt took the matter in hand and pushed through the necessary treaties and contracts, and work began in 1904.

An accomplishment as great or greater than the actual excavation of the big ditch was the control and elimination of yellow fever. A medical researcher named Gaillard licked yellow fever and lost his life in doing so and to honor him the deepest cut was called Gaillard cut.

The construction of the canal involved the excavation of two deep cuts in the higher part of the Isthmus. These cuts were not in strong, solid rock. Before the great ditches were deep enough, the sides began to slide in a most disturbing fashion. Immense landslides occurred and in some instances the bottom of the excavation bulged upward!

These slides caused much discussion in the newspapers and among engineers. Many believed that the canal could not be completed and should be abandoned. The National Academy of Sciences was asked to investigate and report on the problem and selected a committee to do so. Dr. Van Hise was a member of this committee and took an active part in investigating the causes of the slides and the ways in which they might be handled. Van Hise felt that some measurements should be made of the physical characteristics of the rock and earth materials involved in the slides'. (This was before the advent of Soil Mechanics.) He discussed this with me at the time of our work at the Rowe Mine. Shortly after this I was asked by the Committee of the National Academy of Sciences to go to Panama and collect quantitative information about the slide materials.

I went to Panama in January of 1916 and spent a busy and interesting two weeks with the resident geologist Mr. Donald F. MacDonald. We made many physical measurements of the slide rock, unit weight, moisture content, capacity to absorb water, drainage characteristics and strength. Our report aided the National Academy Committee in formulating its report to the Canal Commission.- It was an interesting and educational experience and one of my first excursions into the field of Engineering Geology.

While I was in the Canal Zone I had my first experience with an earthquake. At the time, I was weighing moisture samples on an analytical balance and the balance was repeatedly shaken out of adjustment by what I thought was someone tumbli heavy objects about, on the floor below. This happened several times and I finally went to see if the disturbance could be stopped. I found an excited gathering of the other occupants of the building, that there was no floor below and that we had just had an earthquake.

I was back to Madison in time for the second semester at the University and the usual run of teaching duties and the supervision of exploration work for the E. J. Longyear Company, which required many weekend trips to Minneapolis.

The summer of 1916 was a succession of field trips to various parts of the Lake Superior District for the Longyear Company and I recall no unusual events.

When the University opened in the autumn of 1916 I was asked to initiate a course in Engineering Geology for Civil Engineers. This came as a request from Dean Turneaure of the Engineering School. It appears that a National Committee on Engineering Education had recommended that a required course in Engineering Geology be included in the curriculum of Civil Engineers. I organized the course and started it in the fall and continued to teach geology to Civil Engineers until I retired from teaching. The last class I lectured to at M.I.T. was a group of Civil Engineers and this class completed just fifty years of teaching school!

November 8, 1958

Dear Family,

The year 1917 saw troubled times. War was feared and there was much uneasiness in the minds of everyone. The students at the University didn't know what to expect. Exploration activities must have been at a standstill as my file of reports is a blank for that year. Classes at the University went on as usual but it was difficult for the students to give much concentrated attention to their studies. The course in engineering geology, mentioned in the previous letter was started at the beginning of the second term in February. The United States declared war in April.

During the summer months I again traveled a great deal on various consulting errands for ALCOA and for the Longyear Company. Bertha was expecting a baby some time in the late summer and we were naturally somewhat apprehensive about this event because of the sad time we had had two years earlier. I remained in Madison during August and finally on the evening of the sixteenth of September it was time to go to the hospital. This time Doctor Joseph Dean was on the spot in time. Once more, contrary to all hospital rules, but at the insistence of Bertha I was scrubbed, masked and robed as a member of the reception committee. The second son, Judson, arrived in excellent shape shortly before midnight. Everything had proceeded perfectly and we were very happy parents. At midnight when I went down to my car to drive back home and report to Bertha's mother, I found that I had neglected to turn off the ignition and lights, and consequently had a dead battery. I must have been a little excited when we arrived.

Early in 1917, at about the time this country entered the war, Dr. Leith was called to Washington as an adviser on matters pertaining to the procurement of essential ores and minerals. I remember a conference to which I was called, in the office of President Van Hise. The President agreed to grant Leith a leave of absence, but only if I would promise to remain on the job and keep the Geology Department from falling apart. Van Hise had been Chairman of the Department when he was made President of the University and had the welfare of the Department very much at heart. I solemnly promised to stay on the job "come hell or high water," and Leith departed for Washington "for the duration."

In the autumn of 1918 things really began to happen at the University. One of them was the setting up of the Students Army Training Corps, known as the S.A.T.C. and scoffingly paraphrased as Safe At The College! The Army took over the University, hook, line and sinker. This involved much revision of courses of study, and I noted that no courses in geology were to be offered!

Leith had told me in one of his letters that there was a great demand for engineering geologists in the Army and that I could have an officer's commission with the rank of Major if I found it possible to get away from the University and wanted to go to Europe. No courses in geology! What was there to hold me in Madison? I marched right up the hill to the President's office and found Dean Birge just about to leave a conference with Van Hise. I suggested that he remain, as my errand concerned both of them.

I stated my case briefly: a need for engineering geologists, Leith's letter about a commission, no courses to be given in geology. It seemed clear, logical, and convincing to me, and I felt that I was practically in uniform. Van Hise asked if he could assume that there was no element of personal desire or ambition in my attitude and that I was thinking in an impersonal way of just how I could best help in the situation. Before I could reply, Dr. Birge asked if I had ever read Kipling's story about the bugle boy. I confessed that I had not, so he told it to me. It appeared that a company of English soldiers in a skirmish with some Indian fighters were getting the worst of the battle, so the Captain ordered that the bugler sound the retreat. But the bugle boy was busy with a borrowed bayonet and couldn't immediately be found. When the Captain finally found the brave lad he took him over his knee and spanked him and asked him just who he thought was running things. I got the point.

Then Van Hise took over. He said he knew geologists with engineering training would be of great service in Europe. Reaching for a memo pad and a pencil, he asked me to give him the names of all the geological engineers or engineering geologists I could think of. I named C. P. Berkey, and he snorted and said he was neither an engineer nor a geologist. I named Bill Hotchkiss, and Van Hise said he would take that one. Then I was stuck, and Van Hise said he couldn't name any more either. He asked me if I couldn't teach quite a lot of the engineering aspects of engineering geology to senior and graduate geology students in a semester or two. He said he thought he could and knew I could. And, of course, he then asked me which course I thought would be more sensible - to go to Europe or stay home and train some more men. He didn't wait for an answer to that one but went on to say that he was not releasing me from my promise to stay. So I marched back down the hill with my tail dragging.

The S.A.T.C. plans began to crystallize, and the complicated Army plans arrived. There was no geology in the program! But one day I had a hurry call from Acting Dean Sellery to come to a conference in the library building. (Van Hise was away on something connected with the war, and Birge was acting President.) Sellery was having a brainstorm over organization of the courses which the Army asked for. Among them was "Military Mapping," to be required of all S.A.T.C. students. How many hours of lecture, hours of recitation, hours of field work? I said that wasn't my field and to get Leonard Smith, the Professor of Surveying, in the Civil Engineering course. He said Smith wasn't in Madison and couldn't be located, and neither could any other surveying professor, so it was up to me. So I drew up a schedule of lectures, recitations, and field work.

Well, Van Hise was away, there was no geology on the schedule, no plan to train geologists in engineering geology, and the Army needed engineering geologists as badly as ever. So I called on Sellery, told him of my desire to go, and asked if he could see any reason why I should stay. He said the story was so logical that it made him suspicious, but he gave me his approval in writing. I then repeated my appeal to Dean Turneaure of the Engineering School and secured his consent. With these two approvals I went to Acting President Birge and he also agreed, so my way was cleared. I wired Leith to get the commission ready, sold the idea at home, fixed up the matter of finances at the First National Bank, and took the train to Plymouth to say farewell to the folks, as I was leaving for Washington immediately.

On Sunday afternoon in Plymouth I had a long-distance telephone call from Dr. Birge. He said he wanted me to get back to Madison by the quickest possible means and that he had withdrawn permission for me to leave. He further said that I was to be in full charge of the course in Military Mapping, that the students would be arriving Monday, and there was no one to run the show. I asked of the whereabouts of Lennie Smith, and Birge said he was out of it. So I was thwarted once more. I dragged my tail back to Madison that night, and then began a six months' nightmare.

Military Mapping! About fifteen hundred students. The course had to be planned. A text had to be written and mimeographed. A staff of instructors was enlisted from the College of Engineering staff; on it were a lot of fellow professors, including Otto Kowalke, Jess Komers, Ernie Bean, and a dozen more. Surveying instruments - plane tables, T-levels, and slope boards - were designed and manufactured in hundreds. These were made of wood in the carpenter shop, but they did the trick. The same lectures had to be repeated over and over to the different sections. And there was to be "supervised study," which meant that all students were assigned to study-rooms every evening and an instructor was required to be present in each study-room. The staff had to meet to be taught what to teach! And on top of all that, an order came through to teach a section in engineering geology, which of course was my job. About forty former geology students reported for that course, as it was a good way to get an officer's commission.

Then the horrible flu epidemic came along. The University Club was used as a hospital, and the poor kids died by dozens. Everyone went about wearing gauze masks.

When the Armistice came in early November of 1918, the S.A.T.C. became more or less of a joke. Some continued to take it seriously, but many students did not. I mentioned that it had been referred to as "Safe At The College," but this became "Stick Around Till Christmas"! The whole thing was over at the end of the first semester, and things crawled back to normal for the second semester in February. But I don't believe I ever got over it. So now you have the story of what Grandfather Mead did in World War I!

November 28, 1958

Dear Family,

Yesterday was Thanksgiving Day. Bertha May and I have a great deal to be thankful for. I won't attempt to list our blessings at this time, but we are both well and happy. I went to the hospital on the 9th of this month, had my second cataract operation on the following day, and came home on the 15th. There was nothing painful or unpleasant. Just a bit boring to have to sit around for a week while the eye healed enough to come home. By Christmas I should have two perfectly good eyes and enjoy binocular vision again.

The year 1919 brought one of the most important events in my professional career. My first big damsite! I had started to teach engineering geology in 1917 and had one or two consulting jobs, connected with mines, that bordered on engineering geology: a slide in an open pit iron mine on the Mesabi iron range in Minnesota and an underground water problem in anothe iron mine; but my consulting practice had been largely in the area of exploration and mine development.

In 1919 I was doing some work for ALCOA. I was working in their bauxite deposits of Arkansas and had frequent visits to the main office of the company in Pittsburgh. On one of these calls at the main office, Mr. E. S. Fickes, Vice President and Chief Engineer of the company, remarked that as a geologist I should see what was going on in Tennessee, where ALCOA was starting to construct a large dam. I agreed that it would be interesting and that I would like to see it, but said that I could not afford sight-seeing trips. Fickes then generously asked me to visit the site "on company time" next time I traveled to Pittsburgh. He said he would instruct Mr. Calderwood, the construction engineer, that I was coming at his request and told me to notify Mr. Calderwood in advance of my visit.

On my next trip to Pittsburgh I wired Mr. C. and was met at the railroad station by him. Calderwood was from the state of Maine. He was a tall, thin, solemn-looking man, and

I remember that I thought he looked more like a preacher than an engineer. He was rather formal and appeared to be sceptical of my knowledge of engineering. He had been serving the company in various engineering capacities for years, and the dam under construction was called the Calderwood Dam, in his honor. He had also supervised the construction of other dams for ALCOA. He was one of the most resourceful engineers I have known, and I considered him one of my closest friends for many years.

He took me to the "club house" near the damsite, where most of the engineers on the job lived. Then we drove out to the site, where he turned me loose after pointing out the principal features. The site was in a rock-walled gorge, through which the Little Tennessee River flowed. This was where the river left the mountainous country, and below this narrow gorge the river valley broadened out into wide, flat bottom-land.

There was great activity at the site. A railroad bridge was being built diagonally across the river, for construction purposes. Rock was being scaled from the abutments of the dam. A coffer-dam was under construction. I was much impressed with the amount of work going on. I spent the afternoon climbing about on the rocks on both sides of the river and got up early the following morning to study the geology of the site further. Mr. Calderwood took me back to the railroad station early in the afternoon and I was at the office in Pittsburgh the next morning.

This was to be one of my never-to-be-forgotten mornings. I reported to Mr. Fickes, who had already had a telephone report of my visit from Mr. Calderwood. I can report our conversation almost word for word, as it really impressed itself on my mind.

Mr. Fickes greeted me with a question: "Well, Mead, what do you think of our damsite? Calderwood told me you were there yesterday." I told him that I was somewhat worried about the geology of the site - that it didn't look very good to me. Fickes started poking buttons and spoke to his secretary. Shortly there appeared in the doorway a jovial, dynamic individual who was introduced as James W. Rickey, Chief Hydraulic Engineer of the company. Fickes introduced me to Rickey, told him I had visited the Calderwood damsite at his suggestion, and said that I was not pleased with the geologic structure of the site.

Rickey appeared to be amused rather than disturbed at hearing this. He addressed me as "Professor," saying it in a way I did not like. He said he was familiar with my work on their Arkansas bauxite lands but hadn't heard that I was also an expert on damsite geology. He asked me what I thought was wrong with the geologic structure, and I replied that I thought there was a sharp fold in the rocks of the left abutment which might indicate a zone of leakage. He asked if I had seen the fold and I told him I had not, that its existence was a matter of inference from examination of the cleavage-bedding relationships at the site.

"Then this is a theoretical fold, an imaginary fold that no one has seen," he commented, and I had to agree. Rickey then turned to Fickes and asked him if I had been told that Professor Crosby of M.I.T., the State Geologist of Tennessee, the Head of the Geology Department of Vanderbilt University, and one or two other distinguished geologists had studied the geology of the site for months and had drilled a lot of diamond drill holes. I had not known this and was beginning to wish that I had never seen the Calderwood damsite. Then Rickey asked the $64,000 question: "Professor," he drawled, "how many damsites have you examined?"

I had to tell Mr. Rickey that this was the first one I had ever seen! Rickey turned to leave, but Fickes called him back. He told Rickey that he didn't care if I had never seen another damsite; furthermore, if he had not believed I was a competent geologist, he wouldn't have hired me for the work in Arkansas. Finally, he said he wanted to find out more about that imaginary fold.

Rickey said he agreed with Fickes and turned to me to inquire just how I would proceed to check up on this bit of geological theory. At this stage my stature had shrunk until I am sure I could have walked under the table without stooping. I was willing to skip the whole thing and call it a day, but of course I couldn't do that. I told Rickey that the best way to find out about conditions within the abutment was to drive a small tunnel into the rock on the centre-line of the dam about half way up the side, which would be about 100 feet above the river. He asked if I could stop on my return trip and show Calderwood where to start the tunnel, and I agreed to do that. He asked if I could stay and watch the driving of the tunnel. I explained that I would have to be on the job in Arkansas. He asked if I could send one of my geologists from Arkansas to watch the driving of the tunnel, and I agreed to make that arrangement.

I returned to the damsite and indicated to Mr. Calderwood where the tunnel should be started. He registered no enthusiasm, and I felt that I detected a slightly patronizing smile. I went on to Arkansas and sent one of my geological assistants, Guy M. Schwartz (now Professor Emeritus of Geology at Minnesota) to Calderwood to watch the driving of the tunnel and report to me daily.

Within a few days I began to get his reports: five feet of good rock, ten feet, fifteen feet, twenty feet, all good rock with nothing to indicate the fold. I wished I had never heard of the Calderwood damsite. Then Schwartz reported a change in dip, then open joints or cracks, and then there was a long-distance 'phone call telling of just what I was looking for in the tunnel. I took the next train to Calderwood.

Mr. Calderwood and Mr. Schwartz met me at the railway station. We went directly to the damsite and climbed the ladder to the tunnel entrance. Electric lights had been installed in the tunnel so everything could be clearly observed. The strata had tipped over sharply, and the "theoretical" fold was no longer imaginary. The joints and cracks were open, as the tunnel was entering a badly broken shear zone.

In order to demonstrate that the zone would not hold water and therefore was unsuitable as part of a dam abutment, I had a small earth-dam built to a height of about two feet on the floor of the tunnel just inside of the zone of badly cracked rock. A pump was placed down in the river with a pipe running into the tunnel so that water could be pumped back of the little dam. When the dam was completed and the pump started, the water disappeared into the broken zone as fast as the pump could deliver.

I telegraphed Mr. Rickey in Pittsburgh on the afternoon of my arrival to advise him that the tunnel had encountered unfavorable rock conditions, and he replied that he was taking the night train for Calderwood. Rickey arrived about the middle of the afternoon and was driven immediately to the damsite, where he climbed the ladder and strode into the tunnel. He looked at the open joints and cracks in the rock and the change in slope of the beds and asked a lot of questions as to why I had "dreamed up" this fold. I signaled for the men to start the pump in the river and Rickey jumped a foot in the air when the stream gushed from the pipe behind the little dam. He watched the water gurgle off into the rock and asked where we could expect to find this zone at the surface at points upstream and downstream from the dam. Then he remarked, "---- ---- we can't build this dam!" strode out of the tunnel, climbed down the ladder, and was driven back to the boarding house.

At dinner that night I waited a reasonable time for Rickey and then started to eat. When I had reached dessert and coffee, Rickey called to me from an inconspicuous side table where he had been dining alone and asked me to bring my coffee and join him.

He looked very solemn and unhappy - almost ill. He didn't call me "Professor." He said, "Young man, do you realize what you have done to us?" I said that I hoped I had helped them to get out of a bad situation. He agreed that I had, but not soon enough. He asked if I had any idea of the amount of work involved in the designing of a two hundred foot masonry dam and powerhouse. He proceeded to tell me that the entire project would be abandoned as soon as he could send the necessary telegrams in the morning. It appeared that everything - turbines, generators, and all - were on order. He didn't tell me what this meant in dollars, but it was plenty.

Rickey went on to explain that this was the downstream termination of their long-range plan to develop the Little Tennessee River. The Cheoa Dam had been built about twenty miles upstream from the Calderwood site, and the Calderwood Dam was to back the water upstream as far as the Cheoa Dam. So abandonment of the Calderwood site was the loss of this lower two hundred feet of head.

He asked me if I had seen the Narrows site, which was only about a mile upstream from the Calderwood site, but I had not heard of it. He explained that the Narrows site had been selected first and thoroughly explored and found to be unacceptable. He said they had even driven an exploratory tunnel into the rocks at the request of Professor Crosby to disclose the bad geological features. Rickey asked if I could stay over the next day just to take a quick look at the site and the tunnel. I said that I would be glad to see it, and he sent men up that night to see that the tunnel was open and in good condition for inspection.

Next morning, after a fairly early breakfast, Rickey and I walked upstream to the Narrows site. This was only a little less than a mile upstream from the soon-to-be-abandoned Calderwood site; it was around a bend in the river, where the stream changed its direction of flow by about ninety degrees. We walked up the road on the right bank of the valley. Across the valley the left bank rose in a steep, rugged cliff of rock, whereas the ground surface on our side sloped rather evenly up the valley from the edge of the river at approximately thirty degrees. On this side the bed-rock was mostly covered with soil, and only a few isolated exposures could be seen. This meant that the strata or layers of rock were sloping or dipping downward to the right as we looked upstream, forming the stee cliff on the right and the gentle slope on the left.

The tunnel had been driven into the gentle slope at the level of the roadway. Rickey stopped to explain to me why the location had been turned down as a damsite. He pointed out that the rock strata were sloping toward the river where the tunnel had been driven and that the tunnel had clearly disclosed that the strata had slid down the slope in the past and would probably slide more in the future. Obviously the dam could not be built at the foot of a potential rock-slide.

We walked into the tunnel, using candles for illumination. It was perhaps fifty or seventy-five feet long, clean and dry all the way. The rock layers were beautiful to see; beds of graywacke or arkose about ten feet thick, separated by layers of slate each ten or twelve inches in thickness. I should explain that arkose and graywacke are coarse-grained, dark-colored sandstone rocks, firm and strong. The slate was a black or dark gray rock which split or cleaved into thin flat pieces, as slate always does.

This propensity of slate to split along closely spaced parallel surfaces is called slaty-cleavage. This cleavage has nothing to do with the original layers that the material acquired when it was deposited as successive layers of mud. The cleavage is the result of pressure and movement in the rock and is usually developed as a consequence of the formation of huge folds in the layers during the process of mountain-making. The cleavage in the slate layers was not parallel to the strata of the rock layers but stood nearly vertically, quite in contrast to the gentle slope of the layers of the arkose.

Mr. Rickey sat down on an empty powder box and proceeded to point out to me that the slaty-cleavage was the result of the massive arkose beds' sliding downhill and thus shearing the slate. He said that the geologists who had studied the site and had the tunnel driven were greatly concerned over possible future continuation of this downhill sliding of the rock layers. He obviously expected me to say "amen."

I asked Mr. Rickey where he would go if he could follow one of the layers on its underground course up the slope. He said the layer would gradually flatten and then slope downward in the opposite direction, like following over a huge arch. He said he had had a course in geology at Harvard and knew that this was part of an anticline, which is a great arch-shaped fold in the rock. I asked him if the rock had always been tilted in this manner, and he replied that it had been deposited originally in a horizontal position as layers of sand and mud and had gradually hardened into rock. When the mountains were formed, the layers were folded into great anticlines and synclines and sometimes broken by great fractures or faults. Yes, he did know quite a bit about geology.

After Mr. Rickey had explained it to me, I picked up the discussion by asking him if he had ever bent a deck of cards. He said he didn't consider card tricks a very appropriate topic, but I repeated the question with the assurance that it was important and timely. He confessed to having bent many decks of cards, but wanted to know "so what?" I asked if he could bend a deck if the cards were glued or tacked together. He said that in that case the deck could not be bent but would be a rigid block, and he further explained that the flexibility of the deck was due to the fact that the cards could slide on each other like the strips in a buggy spring.

I explained to him that the rock formations we were looking at were like the cards in a gigantic deck and could bend into folds because the layers of arkose could slide on the neighboring layers and were lubricated by the softer layers of slate between them. Then I asked him which way the cards slid when he bent a deck into an arch or anticline. He reached over and took my notebook and performed a very simple experiment, then he drew a little sketch and studied that. Then he swore loudly and lustily and profanely and asked if I was going to tell him that the rocks slid uphill!

I told Mr. Rickey that I didn't have to tell him that as he had figured it out for himself! He asked about the shear in the slate - wasn't that due to the sliding of the thicker beds? I agreed that it was, but I asked him as an engineer to tell me where the direction of principal shear would have to be if the beds had slid downhill. He worked on that one, drew another diagram, and groaned, "For God's sake, they'd have to be horizontal!" to which I agreed. The vertical cleavage was excellen evidence that the beds had "slid uphill." I told Rickey that if any one of my students had failed to reach that conclusion in five minutes I would flunk him. Rickey wanted to know why the eminent geologists he had employed on the job had failed to ge the right answer, and I told him that the only reason I knew was that they hadn't studied structural geology at Wisconsin!

I explained to Mr. Rickey that the beds had not moved a micron since the fold was formed. They fit together perfectly - there were no openings along the bedding, and the tunnel was dry. So far as I could see there was no danger whatever of the rock layers suddenly starting to slide downhill.

Mr. Rickey wanted to know if I was going to tell him that this was a good damsite. I told him that as far as the sliding rock theory was concerned it was a fine damsite, but that I would want to see the other abutment before I finally approved of the site. Rickey sat on the box and in very picturesque language reviewed our discussion, ending with, "You tell me that the ---- ---- rocks slid up the ---- ---- hill, and I believe it!" Then he asked me if I could stay another day, examine the rest of the site, and write him a report on the whole thing - "And when you write that report I want you to include the deck of cards and how and why they slip." I did that very thing.

At the entrance of the tunnel Rickey sat down in the sunshine on a large boulder, still holding his lighted candle, and indulged in a monologue that couldn't be reported verbatim here. He said, "Am I in a swell position! I have to go back to Pittsburgh and tell Arthur V. Davis (President of the Aluminum Company, and Rickey's boss, and a very forceful character) a story that will blow him through the ceiling. How we employed a flock of famous geologists who spent many weeks down here, examined one site, concluded it was no good because the rocks would slide, and then examined another site and said it was splendid. So we designed a dam and a powerhouse and started the dam and ordered the powerhouse equipment. Then a young bauxite geologist stopped in at the invitation of Fickes. He had never seen a damsite, but he climbed around for a few hours and came to Pittsburgh with a fairy story about an imaginary fold in the abutment. Just to satisfy Fickes we put in the tunnel he suggested and found the ---- ---- fold and it wrecked our plans for a dam there. Then at my suggestion he looked at the tunnel at the other site and came up with another fairy story even better than the first. He said the rocks had slid uphill and he made me believe it. So this is a perfectly good damsite. That's the story I must report to A. V. Davis."

I remained on the job long enough to complete an examination of the Narrows damsite and write a report for Mr. Rickey, playing cards and all. The Calderwood Dam was eventually built at the Narrows site - a beautiful thin-arch structure.

Perhaps I have spent too much time on this story of my first two damsites. I can only say, in trying to justify my volubility, that it was an extremely important episode for me, both professionally and economically. This was the first of a long line of damsite studies for the Aluminum Company of America in this country and in Canada, culminating in the last and largest in 1949. This last project involved a dam on the upper Yukon near Whitehorse, backing the water up in a great chain of lakes to feed into a twenty-mile tunnel to be driven under the coastal mountain range beneath the famous Chilcoot pass, and using the water under a 2,000 foot head before dumping it into the sea at Skagway. This development has never been started because of lack of international cooperation with the Province of British Columbia. But it was an interesting job.

I examined and reported on many damsites and related matters for the Aluminum Company over a period of nearly thirty years. Jim Rickey and his successor, Jim Growdon, were both very fine friends of mine, and we tackled many tough problems together.

And this is a very good place to end this much too long letter.

December 4, 1958

Dear Family,

As I look back on over fifty years of teaching geology and selling my services as a geologist, a few incidents or events stand out rather vividly; the last part of the preceding letter covered one of them. It was interesting that I, quite by chance, stumbled into a situation in which I could reverse the findings of older and more experienced geologists on two damsites simply because I had an understanding of the mechanical and metamorphic consequences of rock-folding. It was a most important affair for me, as it led to almost continuous consulting work for the Aluminum Company. I was never given a retainer or salary - just hired on a per diem basis for each job.

In looking over the file of my reports on consulting jobs, I find that 1920 was a busy year. My work for ALCOA was not confined to engineering geology, and in 1920 I directed exploratory work in the flint clay district of Missouri to see if diaspore (an aluminum ore mineral) could be found in mineable amounts. This was interesting, but the results were negative.

The file for this year also has reports on seven damsites in the southern Appalachian region, in Tennessee and North Carolina. One of these was a preliminary report on the Fontana damsite, where a very large dam has since been built by the T.V.A.

I should explain that with all of this consulting activity my University work went on as usual, and the outside work enabled me to give most welcome temporary jobs to some of my students. I know I was a much better teacher because of the consulting work. I could bring actual, live geological problems into the classroom, and I know of no better way to train geologists.

The year 1920 was important in still another way. On August 30 (on his mother's birthday!) our youngest son, Jeremiah, was born. I think we took a stroll in the morning and late in the forenoon decided to go to the hospital and call Dr.

Saint Mary's Hospital,
where Judson and Jeremiah
were born.

Dean. Once more I was scrubbed, robed and fitted with a mask as part of the reception committee. By two o'clock we had a fine new son, and his mother and I had tea in her room! She said she felt like going home, and it seemed silly to stay there in bed. Yes, we were very happy.

Some time in the autumn, I forget the exact day or month, I had a telegram from one of the engineers in the office of the Oliver Mining Company of Duluth asking me if I would be interested in and available for exploratory work in Manchuria the following summer. I had recently seen Dr. H. Foster Bain, Director of the U.S. Bureau of Mines, and he had told me of a visitor from Japan who had come to see him about iron ore and coal in Manchuria. This was Viscount Inouye, an important personage from Japan who had come with a trunk full of maps and data and asked Bain to recommend a group of engineers and geologists to interpret his data and advise his company on exploration and development of the coal and iron.

Bain said he had told the Viscount that American engineers would not attempt to reach conclusions on information gathered by others; he advised him to employ some carefully selected technical people to go and gather their own data and then advise his company. Bain had suggested that the Japanese gentleman consult Mr. J. Uno Sebenius, Chief Mining Engineer of U. S. Steel, of which the Oliver Mining Company was a mining subsidiary. Bain further said that one of the coal engineers in Washington had been paid $10,000 for a compilation of data on coal mining gleaned from the published reports! Rather easy money.

So I guessed correctly that the telegram from the office of J. Uno Sebenius was the result of a visit from the gentleman from Japan. I replied that I would be interested and available but would like to know more about the enterprise. I was then invited by a telegram from Mr. Sebenius to a meeting in the office of Dean of the College of Mining at the University of Minnesota, in Minneapolis.

I took the familiar night trip to Minneapolis and went to the office of Dean Appleby, where I found the meeting already in progress, with J. Uno Sebenius pompously presiding in the Dean's chair behind his big desk. I was briefly introduced to Viscount Inouye, to Mr. Tamura (New York representative of the South Manchuria Railway Company), Dean Appleby, Professor Emmons (Head of the Geology Department at Minnesota), Mr. Crago, Mr. Hutchinson, and Mr. Davenport. Appleby and Emmons were old friends; the others I had not known before.

Sebenius cut all conversation short, planted me in a chair across the desk from himself, and immediately started to make a speech directed at me personally. He was a very brusque person, accustomed to having his own way. He was characteristically domineering and bad mannered and spoke somewhat broken English with a pronounced Scandinavian accent.

He told me that Viscount Inouye had asked him to select a group of engineers and geologists to examine the coal and iron deposits, and that here was a most wonderful opportunity! A trip to Japan and Manchuria! He said he had not picked out people with big reputations, but people who knew what to do. He said he knew I would be glad to go just for the expenses of the trip but that they would do much better; they would pay each of us the generous sum of $300 per month in addition to expenses. "That will be satisfactory to you, Mr. Mead, will it not?"

I told Sebenius that I was flattered to have been chosen as a member of the commission, that I would be happy to go for my expenses if I could afford to, but that I had a wife and family to support and couldn't afford any sacrifice of income just to take a trip. Sebenius said, "Yes, but we are offering you a handsome monthly sum in addition to your expenses; I guess you didn't understand me." I told him that the fee was not adequate because I could earn much more on work I was already committed to in this country. Sebenius wanted to know how much more I would have to be paid to take the trip. I told him I preferred to discuss the matter in more privacy, but he insisted that we talk about it right there. So I thought I might as well let him have "both barrels," though I knew he would hit the ceiling. I told him that foreign consulting work ordinarily commanded a premium over domestic rates but that I would be willing to take the trip for the same fee I would receive for similar work in this country, which was $100 per day for time away from my office and all expenses. The old man blew his top, yelled that this was ridiculous, adjourned the meeting for lunch, and asked me to give the matter careful thought and meet with him again after lunch.

I was immediately surrounded by Emmons, Crago, Hutchinson, and Appleby. They wanted to know if I was out of my mind. Would I really turn down a wonderful trip like this? They had all accepted the terms proposed.

I returned after lunch and was ushered into a smaller office with only Sebenius and Inouye present. Sebenius wanted to know if I had given the matter further thought. I admitted doing so and added that I had been very uncomfortable about the whole affair, that it was the first time I had ever had to haggle over a fee. I told Sebenius that I wished to withdraw my offer to accept $100 a day and expenses, that I didn't want him or anyone else to feel that I was paid too much, and that I certainly did not wish to work with a group who received less compensation than I did. I said I would be glad to help them to get some one else but that I was through, and I arose to leave. At which point Viscount Inouye took over. Sebenius left the room in disgust. The Viscount explained that he appreciated the efforts of Mr. Sebenius to keep the cost down but that he thought my charge was very reasonable and had expected to pay more. He assured me that if I would go, every member of the group would be given the same per diem and all expenses. (I afterwards heard that Dean Appleby would accept only his expenses and went as "honorary" chairman of the commission.) The Viscount said that Mr. H. Foster Bain had particularly urged him to get me on the job. I accepted.

I later saw the other members of the commission, who were rather flabbergasted, but grateful. I explained that I had heard of the payment of $10,000 for a compilation of published reports on coal and hence knew that the Viscount expected to spend money.

Sebenius hated to back down in any situation, and I am afraid he never forgave me for coming out ahead in this argument.

We sailed from Seattle on June third. I kept a day-by-day journal until we were about to leave Japan for Manchuria and then stopped, probably because I was too busy with other things. I recall that the trip involved quite a long railroad journey on Japanese sleeping cars, which were not at all comfortable for the taller members of the party. The berths were strictly for the average Japanese traveler and too short and narrow for Hutchinson and Davenport. I had a certain amount of trouble, but it wasn't too bad. We boarded ship at the western end of the Inland Sea of Japan and landed in Dairen, South Manchuria. Here we spent a day or two at the Yamata Hotel.

We were accompanied by a carefully selected group of five or six Japanese gentlemen who were to serve as hosts or companions. They were not technical men and were in no way to serve as assistants or helpers. Their duties were purely social. They were all fine men and congenial. I cannot name all of them from memory at this time, thirty-seven years later, but I do remember Dr. Kanda, a delightful old gentleman in his late sixties. He was one of the oldest and most respected of the Japanese mining engineers. I also recall Dr. Herota, Professor of Mechanical Engineering at the University of Tokio, who was very widely sought after as a consultant on mining machinery. In the usual Japanese fashion, accepted as quite proper, he collected a commission on all sales - both from the purchaser and from the company supplying the machinery! An American salesman of mining equipment told me at a later time that any salesman of mining machinery had to "see Herota first."

Then there was a very active little fellow who had charge of all matters concerning tickets and hotel and travel arrangements. His name, appropriately, was Go. Mr. Tamura, the New York representative of the South Manchurian Railway, had been with us all the way from Minneapolis and continued as a host in Manchuria. Mr. Mok Joya was another important host. He was a newspaper man but did not come as a reporter; he had served as official guide and companion for various American visitors in Japan. He was very tall for a Japanese and was a most useful source of information. After all the years I still exchange holiday cards and an occasional note with Joya. There was also a vice president of the Yokohama Specie Bank, whose name I cannot recall.

Joya passed around cigars and cigarettes at the hotel in Dairen, and it was apparent that there was much interest in our reaction to the smoking materials. I was a cigar smoker at that time, as were Appleby and Hutchinson. We agreed that we had never smoked anything finer than these beautiful, big Jamaican cigars. They had about a carload of boxes of these cigars for us, and there was a box on my dresser throughout the visit. Emmons, Crago, and Davenport used cigarettes and Emmons told me that these were the finest made. He had read about their use by royalty but had never smoked one before. It appeared that they were going to treat us right!

We had assumed that South Manchuria was a wild country and had brought the usual field equipment, complete with tents and other things. We were told that there was a little old makeshift hotel near the iron properties that we might try for a few days, before erecting the tents. We journeyed northward by rail to Anshan, where the Company's steel plant was located. A few miles south of Anshan, at a place called Tang-Kang-Tsu was the "small hotel" they had mentioned. This was a truly delightful place, used primarily as a vacation spot for officials of the S.M.R. and the steel company. It had been set aside for the use of our party, and the most elaborate preparations had been made for the "foreign" guests. It was normally equipped with floor mats for sleeping Japanese fashion. But for us, regular beds with mattresses, bedding, and pillows had been shipped in and installed. A special kitchen had been equipped for us and was presided over by a Japanese chef who had been trained in Paris. He was a jolly, fat fellow who spoke excellent English and played billiards. Incidentally, he was a grand cook.

A beautiful, tournament-sized French billiard table had been installed for our entertainment, but it soon developed that I was the only member of the party who had made any pretense of playing billiards. So the chef and I played billiards every evening after dinner! We always had an interested audience seated around the room on a slightly raised platform.

After a day or two at Anshan and Tang-Kang-Tsu, the party split into two teams: Emmons, Davenport, and Crago went on to Fushun to work on the coal deposits of the company; and Appleby, Hutchinson, and I remained to work on the iron deposits.

I am afraid I may have given the impression that this trip was just for fun. We really worked hard, long hours, seven days a week. The work on the iron deposits required a lot of field work over very rough terrain, a lot of systematic sampling of the iron deposits, and a lot of laboratory work on the samples. Dean Appleby and Hutchinson looked after the laboratory work, which included crushing and magnetically separating the samples. The company laboratory made the analyses. We had brought with us the latest thing in a laboratory magnetic separator, and it was very useful. A crew of laboratory helpers was recruited and trained.

I had two very good field assistants in Mr. Kurishima, the Chief Mining Engineer of the company, and his assistant, Mr. Takatoshi. Kurishima has since become one of the leading men of Japan. He is head man in Japanese copper production and has twice visited me in this country.

We had to introduce several innovations into the Japanese way of doing things. Their working day for technical people had been from about ten o'clock in the morning 'til about three in the afternoon. We rode to work each morning in the "inspection car," which was a self-propelled observation car with comfortable chairs and lots of windows, built over and around a small steam locomotive. They were appalled when we asked that the car be ready to take us at seven in the morning. This they just couldn't believe. The car took Appleby and Hutchinson to Anshan and continued with me and my helpers over any one of the various branch lines to the several mining properties. But there was a lot of walking and climbing after we left the car. On the second or third morning it was raining. A telephone call came through with the inquiry, "You will not wish the inspection car today?" I asked why he thought that, and he replied, "It is raining; you will not wish to go out in the rain." I assured him that we would want the car every morning, regardless of the weather. We found that no one worked outside when it rained. Obviously they thought the foreigners were crazy!

On the first day in the field, I and my two helpers were miles from anywhere as noon approached. I had brought no lunch, in fact had not given lunch a thought. At noon, a winded Japanese in pith-helmet - and consequently an employee of importance - appeared from nowhere, bowed, and inquired, "You wish to eat lunch?" I assured him that I did and he replied, "Please, it is not very far." I followed him to the far side of a small hill, where a nine-by-twelve tent had been erected; the walls were rolled up and an extra fly was stretched above to keep the sun off. There was no shade, the weather was hot, and the sun blinding. In the tent was a large oak table, two upholstered leather chairs, a washstand with mirror, washbowl, and towels, and a waiter in a white coat standing behind some large hampers.

I refreshed myself at the washstand and sat down at the table. My assistants had disappeared. I was served a wonderful cold luncheon, with hot tea and iced bottled water. Paper plates and bamboo knives and forks. Cold sliced chicken, a wonderful cold salad. All of this in the wilds of South Manchuria!

This same set-up appeared from nowhere every noon. I myself didn't know where I would be at noon, but they never missed me. I asked to have my assistants lunch with me after the first day, and they were delighted.

One day a heavy rainstorm suddenly appeared. I expected to get a soaking, but at the last moment a running messenger appeared, loaded with yellow slickers and hats. After the shower we just left the slickers and hats on the ground and went on with the work; the next time it rained, the same equipment appeared at the crucial moment.

On the Fourth of July they planned a big party for us at the hotel, and brought Emmons and Davenport and Crago down from Fushun for the occasion. In the morning I took the whole party for a tour of the iron deposits. There was one large, rugged hill of iron-bearing rocks, from the top of which a wonderful view could be had of the entire area. It was quite a climb but there was a good trail. At the very top was a flat-topped, man-made addition to the hill, one which would interest any archeologist. This table-like flat top was not more than thirty feet square. As the party reached it from one side, a cavalcade appeared from the opposite side, bearing a great oaken table, leather chairs, and a tent to cover the works. This was all erected with astonishing facility. When we sat down to enjoy the view, a second caravan appeared with chilled water, tea, and sandwiches!

The Japanese officials were astonished to see us really work. They had expected us to stand around under sun umbrellas and give orders. They had reserved a row of summer cottages at Star Beach, the nearest summer resort on the ocean, and had expected us to spend most of our time there. We did not see Star Beach! I think this was a great disappointment to our official hosts. But we got a great deal of work done and eventually came up with four volumes of reports containing a lot of important information and data.

Four weeks prior to the scheduled date of our departure from the job we received bluntly worded instructions to be ready to leave in a week, regardless of the state of completion of the work. This seemed very strange and it worried us, but we hurried the job to a finish and were packed and ready to go as ordered. We went by train to Seoul, the capital of Korea, and were taken to a beautiful hotel where each member of the commission had a suite of rooms. That night there was a magnificent banquet, at which time we were told in a speech by a high official of the South Manchurian Railroad that we had worked too steadily and too long and had passed up the planned hospitality - so, we were going to get some of it before we sailed, and were given no choice in the matter. We were to have three weeks of vacation (at full pay), including several days in Korea. Also visits to the beauty spots of Japan!

I recall one incident at the banquet in Seoul which illustrates the excellent Japanese sense of humor. Hutchinson had said that he really liked ice cream and had never had enough of it. When dessert was served, a long queue of waiters appeared each carrying a serving of ice cream. Before he had quite finished the first serving it was snatched away and replaced with a second, to the great delight of the guests and the discomfiture of Hutchinson, when he discovered the line of waiters. The M.C. explained that they did not wish Hutchinson ever to say again that he had never had enough ice cream.

We had a comfortable overnight crossing of the channel to Japan. When we boarded the boat, we were subjected to Japanese immigration and customs inspection. Joya passed around the big cigars we had been smoking all summer and carried, fully exposed, the remaining boxes of cigars, at least a dozen or more. He was having a big argument with the customs inspector, and I asked Dr. Kanda to interpret it for me. Kanda said it was very funny. There was an enormous import duty on tobacco and cigars, and the inspector insisted he must collect or confiscate. Joya argued that they were not taking the cigars into Japan - just onto the boat, for the Americans to smoke during the trip. The inspector said the Americans couldn't smoke that many, and Joya emphatically told him he had never seen these Americans smoke! He got away with the argument, and we had cigars all the way.

In Japan we visited many beautiful spots, but the one I best recall was a week at the beautiful Fujiya Hotel, near Lake Hakone. Our hosts had at their disposal a fleet of shiny new Hudson Supersix automobiles, and we were taken for daily rides to see the country. (And never more than three passengers per car, besides the driver!) A spot on the shore of Lake Hakone is famous for its view of Mount Fuji across the water. We were taken there daily but never saw the mountain, which was obscured by clouds. This was embarrassing and disappointing to our hosts. On the last time I told them that finally I understood - Mount Fuji did not exist at all! Although it was a thing that one must believe, it was actually just a figment of the imagination!

During our stay at this famous resort hotel, I had a beautiful suite of rooms: bedroom, parlor, porch, and a magnificent bathroom with a sunken marble tub. By that I mean the top of the tub was flush with the floor. I was embarrassed when I discovered that other members of the party had quite ordinary rooms. I was sure a mistake had been made and that the suite was meant for Dean Appleby, Chairman of the Commission. I was assured that this was not the case. Later on, in Tokio, I found out why.

Frank Hutchinson was much impressed when he found that the slippers supplied with the room were neatly embroidered with his initials F. H. It let him down a peg when he realized that F. H. were also the initials of the Fujiya Hotel!

After a week in Hakone we moved on to Tokio, where we were to have a week of sightseeing and parties before sailing. We were housed very comfortably in the Imperial Hotel, the building which was later to be rebuilt by Frank Lloyd Wright. I have already made this story much too long, but there were three or four things that happened in Tokio that should not be omitted.

Soon after our arrival we received a call from an obviously V.I.P. who introduced himself as the military attache of the American Legation. All he wanted was a copy of our report! We explained that this was a professional report for our client, the South Manchuria Railway. Since we were not at war with Japan, we couldn't understand why there was any reason for divulging this material. Furthermore, we explained, the report had not yet been written. I suggested to Chairman Appleby that the gentleman be told that we would be glad to answer any questions he thought important and that he should return the following day with his questions; that was the way it was set up. He came back the next day and, as I had anticipated, his questions were quite harmless. He was incapable of formulating a set of pertinent questions. Years later, during the second World War, all of our reports on the coal and iron deposits were loaned to the U.S. naval authorities. They probably afforded good information about areas to be bombed.

One day I was paged in the lobby of the hotel, and a messenger in uniform handed me a note. It was from a Mr. Asano, inviting me to dinner at his home. He apologized for the late hour of the invitation and explained that he had not known until this day that I had arrived in Tokio. I turned to Mok Joya, who happened to be nearby. He read the note with obvious astonishment and advised me by all means to accept. The messenger said that a verbal answer was all that was necessary, so I told him to tell Mr. Asano that I would be pleased to accept his invitation.

I then turned to Joya for an explanation. Joya said that if he were standing in the lobby of the Waldorf Astoria in New York and a messenger gave him an invitation to dine with J. P. Morgan, it would be a similar situation. He explained that Asano was probably the wealthiest man in Japan, owning steamship lines, mines, railroads, power plants, among other things. This industrial and financial structure had been built by his father, recently retired, who had started life as a rickshaw coolie!

The younger Asano, a graduate of Yale University, had traveled widely and was a man of unusual ability. Joya said he had been greatly interested in hydroelectric developments in Japan, and that last statement tipped me off as to why the invitation to dinner. My good friend Jim Rickey, Chief Hydraulic Engineer of ALCOA, had been on a trip to Japan a year previous and had told me much about it. My guess, which proved to be correct, was that Jim had written to Asano and suggested that he see me when I reached Tokio.

At the appointed time I was picked up at the hotel and whisked out to the Asano residence in a rickshaw drawn by two coolies! These spry fellows ran all the way and at a good clip - a very comfortable way to get about. Asano had an occidental-style home in very good taste. We dined at a regular dining room table with conventional chairs. There were three of us: myself, Asano, and his male secretary, a young Japanese who had been educated in England. My place was set with the conventional knife, fork, and spoons, while the others had chopsticks. I had become quite skillful with the sticks so I protested the discrimination, and my dining tools were changed.

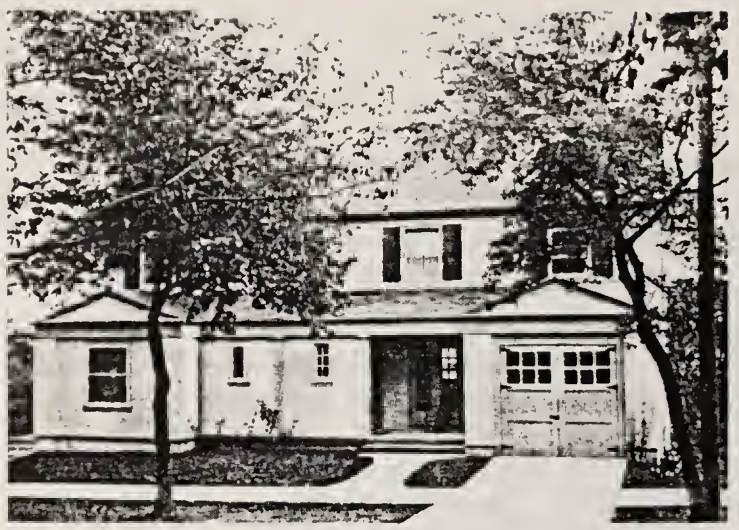
After dinner we talked of many things. I particularly remember Asano's concern over the possibility of war with the U.S. sometime in the future. Remember, this was in 1921! Asano said he could not dispel from the back of his mind the fear that some day the "jingoes" of his country and the U.S. would excite the people to the point of war. I remember his saying, "You have seen our people and know of our resources; I have seen your country and your people and am aware of your resources. I know and you know that there could be only one result of such a conflict. England would certainly come in with you, and Japan would be beaten and set back - perhaps a hundred years. If this ever happens it will not be triggered by the intelligent people of Japan."

The following evening we were entertained at a "smoker" by the engineering societies of Japan. This was an astonishingly elaborate affair in a great hall on one of the upper floors of a modern building. A beautiful garden had been constructed in the centre of the room, with a stream having waterfalls and bridges, flowering shrubbery, and trees that reached almost to the high ceiling. At each of the pillars or columns around the room, on an artistic stand, was a large cylinder of crystal clear ice. Each cylinder contained a cluster of beautiful flowers, which were further enhanced by the plumes of air-bubbles presumably formed as the water froze. We were asked to go, one at a time, into an adjoining room where the most popular of the modern artists had an exhibit of his paintings. We were given a score-card and asked to indicate what we considered to be the three best paintings in order of our individual preference. They explained that this was an experiment designed to determine how Americans would judge Japanese art. None of us tumbled to the fact that we were selecting a gift of a painting. When we returned to the hotel, we found one of the paintings of our choice, beautifully packaged. Mine still hangs in our living room.

On the following day we boarded a fine Japanese passenger ship at Yokohama and sailed for the U.S.A. After the first day, when we passed through the tail end of the oriental version of a hurricane - a typhoon - it was a beautiful, smooth passage. We managed to do quite a bit of work on the various reports. The ship made an overnight stop in Honolulu, where we had some sightseeing drives and spent one night in a beautiful hotel quite near the famous Waikiki Beach.

Arrival in San Francisco was uneventful, except that I was a bit worried over the prospect of opening up my many pieces of luggage for customs inspection. I had a number of pieces of baggage filled with carefully wrapped rock specimens. I told the inspector that it would take hours to examine each specimen, but he thought he would have to do just that. Then I recalled the important-appearing document that I carried, decorated with a gold seal and ribbon! This imposing piece of parchment, signed by the President of the University and the Secretary of the Board of Regents, was intended as an introduction to any universities I might visit. I had not used it. The inspector was so impressed that he didn't open a single piece of baggage!

It had been a wonderful summer, and it was nice to get home and find the family well and happy. The job had been profitable enough to enable us to start the construction of the house on Adams Street in Wingra Park, where we lived until we sold it and left for Boston, in 1934.



The Adams Street House,
Front.

January 4, 1959

Dear Family,

In my last letter I finally succeeded in writing my way out of Japan and back to normal in Madison. I wrote too much, just as I talk too much, but this habit is difficult to control. I was back in Madison in time for the opening of the University, and the usual program of teaching and consulting promptly got under way.

One of the first important items was the planning of the new home we had been dreaming about for some time. Our finances had been sufficiently bolstered by the oriental trip to enable us to proceed with the planning and construction of the house. We had acquired two lots extending through the block from Jefferson Street down a fairly gentle slope to Vilas Street. This location is only a short three blocks from the apartment we had been living in. We planned the layout of the house ourselves, with excellent suggestions from Mother Taylor, and I employed a geology student who was a good draftsman to do the drawings. Construction was underway in the spring of 1922 and we moved into the new home that same summer.

It was really quite a house - built close to the street in front, with a garage included in the structure, balancing the kitchen at the opposite end, and an entrance porch between. The ground sloped rapidly to the rear, consequently the basement floor was at ground level at the back of the house, where there was a large screened porch, opening directly onto the rear lawn and gardens. The laundry had full-height windows, as did the work shop at the opposite end. On the first floor, above the basement porch, was another pleasant porch, which was entered from both the living and dining rooms. On the far side of Vilas Street, at the foot of the property, was a park area bordering Lake Wingra. This provided a pleasant outlook from the rear of the house, and the lake was an attractive place

The Adams Street House, Rear.

for small boys to fish and play although there were no beaches for swimming or wading.

The house provided abundant space for the family, and there we lived very happily for about twelve years, until in 1934 we sold the place and moved to Boston.

In reviewing my notes and files of letters and reports, I find that the early 20's were busy and eventful years. I find it difficult to understand how all of these things were accomplished. I will try to limit this account to a few of the important ones.

My file of reports on mine examinations, damsites and other matters lists five that were written in 1922 and 1923.

In 1923 I received a letter from Mr. William Clark of Butte, Montana informing me that his company was involved in an important piece of mining litigation with the Anaconda Copper Company and would like to secure my services as an expert witness. He enclosed a check for $1,000 which was intended as a retainer. I found that Mr. Clark was a son of Senator Clark of Montana, who had been a very prominent figure in the copper industry in the West. Mr. Clark's letter said that he anticipated that I would wish to examine the merits of his case before agreeing to serve, and he invited me to come to Butte and look into the situation.

At this time I was not exactly out of consulting work, because there were enough assignments from the Aluminum Company and others to enable me to keep the wolf from the door. (I was a professor at the University of Wisconsin, but a professor of geology had to earn enough money in the summer time to afford to be a professor in the winter.) Still, I had recently severed my connection with the E. J. Longyear Company, so this was a very timely arrival of a new connection.

I went to Butte and found that Mr. Clark's position in the litigation was a sound one. I accepted the retainer and this

Lake Wingra
from upper porch of the
Adams Street House.

started a profitable and highly educational experience. It involved frequent visits to Butte and the detailed mapping of many miles of mine openings in the Poser Mine of the Clark Company and the Badger Mine of the Anaconda Company. This precise - literally inch by inch - mapping was a new experience for me. The detailed accuracy was necessary because these underground maps and notes were to serve as a basis for testimony in the trial of the case, and it was necessary to be absolutely sure of the facts.

Also working on the case were Professor Andrew Lawson of the University of California, Dr. Frederick L. Ransome, who at that time was living in Arizona but had formerly served for many years on the staff of the U.S. Geological Survey, William Simpkins, a mining geologist from California, and the local company mining engineer, George Roddewig, and the company geologist, Mr. Cole. In charge of the planning of the case was Albert Birch, a mining engineer whose home was in the state of Washington. Mr. Birch was experienced in mining litigation.

I had entered into this undertaking with a slight degree of trepidation for there was much gossip and discussion about the professional ethics of expert witnesses in mining litigation. Some geologists had ventured opinions, one of them in print, that expert witnesses in mining cases were not free agents but were expected to testify in a manner favorable to the client! I had my eyes open for just that possibility and a firm resolve that I would drop out of the case the moment anyone attempted to tell me what I was to say or to influence my opinions. I was therefore greatly relieved when Albert Birch reiterated time after time at our many conferences that the most important matter was to ascertain the facts, whether they were favorable or unfavorable to our case. Birch would say, "We must have the facts and stick to them, we must develop as far as we can the other side of the case as well as our own. We can't win unless we are right."

We were somewhat surprised when Dr. Ransome appeared as a member of our staff of experts. Ransome had expressed in print his opinion about the questionable ethics of expert witnesses, and it was indeed unexpected to find that he had accepted a retainer and agreed to become one. In my student days I had regarded Ransome as one of the great geologists in the field of economic geology, because many of his U.S.G.S. reports had been used in the classroom. I was shocked and amazed when Billie Simpkins called my attention to the disturbing fact that Ransome's underground maps were in many places quite contrary to the facts. Ransome apparently lacked the ability to do the necessary precise and detailed mapping of geological features. He was obviously afraid that someone would try to push him around. He overlooked important structural details and mapped others in the wrong places and with erroneous orientation. I remember one critically important underground detail where two veins formed a junction; Ransome insisted that the veins formed not a junction but an intersection. In this instance the entire group of geologists, engineers and lawyers went into the mine with Dr. Ransome to review this important feature. Ransome agreed that he had been wrong and that it was a junction and not an intersection. At a conference a week later, it was, in Ransome's opinion, again an intersection so we all went underground again! Mr. Colby, the attorney in charge of the case, finally gave up in despair, and although Ransome continued to make his maps, Mr. Colby sent the doubtful witness home when the day of the trial arrived, because he would not only have been helpless, but dangerous on the witness stand. Perhaps he was just smarter than any of the rest of us and took this means of pulling down a good professional fee, while at the same time avoiding the nerve-trying job of being a witness.

One of the many pleasant byproducts of the case was the opportunity to get acquainted with a famous and interesting geologist, Professor Andrew C. Lawson. Lawson was a man of striking appearance, tall and thin, with a great walrus mustache, piercing blue eyes, and eyebrows which he wore twisted upward into something resembling devil's horns. He had a sharp, keen mind and a very brusque manner, and he expressed himself freely and emphatically in a high-pitched voice that was a bit squeaky - the type of voice that has been called a "whiskey tenor." Andy had few, if any close friends, because he frightened away most people who might have been intimate with him. He interested me greatly. I thought that he might be a lonesome man and that perhaps his abrupt manner concealed his real personality, so I took this as a challenge. One evening after the group had dined, I suggested to him that we go and have a smoke; so we found a comfortable couch in the lobby

Grandpa Mead with
Jere, Juddy, and Warren
On porch at Plymouth.

and proceeded to get acquainted. This after dinner smoke became a daily habit whenever we were in Butte. I found Lawson a most remarkable person; the forbidding exterior protected a surprisingly gentle soul, the soul of a poet. I discovered that he had written some delightful poems, one in particular about his granddaughter.

I became quite fond of Andy but was not prepared for what followed. I was really surprised one morning in Butte when Lawson arrived at the hotel from a late train, shortly after I had had breakfast. He saw me in the lobby, strode to where I was sitting, pulled a typewritten letter from his pocket, handed it to me and strode away. The letter was from the Vice President of the University of California, addressed to me and advising me that I had been appointed Professor of Geology at the University and expressing the hope that he would have an early acceptance and that I would join the staff in the fall when classes began. A short time later Lawson joined me with a twinkle in his eye and chirped, "What do you think of the letter?" I told him truthfully that I felt like the old maid surprised by a proposal of marriage. He admitted that it was a little unusual to have a definite appointment without any preliminary discussion and said he had thought we might as well have something definite to discuss. I said that I had a perfectly good job at Wisconsin and that I couldn't leave there next fall, because Leith was going to be away and I had to run the department. Lawson said he hadn't expected that I would accept the offer immediately, but, he suggested, "Why not wait until next year and come as a Visiting Professor?" This proposal appealed to my family and to me, and consequently I accepted an appointment as Visiting Professor for the year 1926 - 1927 and the entire family went to California. I will tell you about this in another letter.

Perhaps I have given an undue amount of attention to the matter of the preparations for the Butte lawsuit. This actually took only a small part of my time and there are other contemporary items that I should tell you about.

Nana Taylor and her
grandson Warren.

In the winter of 1925 I made several trips to Plymouth as we were much concerned over the illness of my father. Tw years previously, the family physician in Plymouth, Dr. Edward Felter, an intimate friend of both Father and Mother, told me that he had been shocked to find, in the course of a routine checkup, that Father had an incurable heart ailment. (I believe he called it endocarditis.) He estimated that there was a life expectancy of only about two years. The diagnosis and prognosis were both correct. Father died at his home in Plymouth on February 19, 1925. I was there at the time. He was given a Masonic burial in the Plymouth Cemetery on Washington's Birthday. Bertha came to Plymouth for the funeral and stayed with Mother and Grandmother Robinson when I returned home.

Bertha's mother, Nana Taylor, had been with the boys while we were in Plymouth. I was sorry to find that Mother Taylor had been suffering from a cold. She complained of an earache, a common accompaniment of her colds. I persuaded her to return home and go to bed to recover, and she did so. On the following day Bertha was to return on the afternoon train. I called to see Mother Taylor at noon, before going to the train to meet Bertha. She said she was feeling much better, but I persuaded her not to get up. On returning from the station with Bertha, I dropped her at the apartment to see her mother and continued to the house. Bertha soon called me by telephone to say that her mother appeared to be fine when she first arrived but had suddenly begun to act in an irrational ma ner. She urged me to come at once. I was astonished to find that Mother Taylor appeared to have a high fever and was moaning quietly in what appeared to be a state bordering on coma. I got our physician, Dr. Van Valzah, there as soon as possible by driving to his home for him. It appeared that Mother's ear trouble had developed into meningitis and that there was little that could be done for her. She died at about ten the following morning without regaining consciousness. This was just one week after the death of my father.

These were very sad days for all of us. My father's death had been expected for some time but the death of Mother Taylor was distressingly sudden. The sadness was softened to some extent by the fact that this had not been a long illness with extended worry and suffering for her and that Mother Taylor had many times expressed the hope that she would not live to be old. She had always dreaded old age.

Bertha's mother had been born Helen Stuart, in the small town of Jonesville, Michigan. Both parents had died when she was very young and she grew to girlhood in the home of her Aunt Susan and Uncle Lyman Willson in the town where she was born. She went to high school and attended Hillsdale College in the town of that name not far from Jonesville.

In 1877 when Helen Stuart was twenty she married a young man named Walter Frank Taylor, and in 1883 their second child, Bertha May was born. A younger daughter, Florence, died in infancy. Bertha's parents were living in Jonesville at the time of her birth. They lived briefly in Detroit, Michigan and then moved to Madison, Wisconsin when Bertha was still a little girl.

After the death of Bertha's mother, she and her father disposed of the personal and household effects and rented the apartment. Father Taylor came to live with us in the fall of 1925. We had remodeled a corner bedroom for him by building wardrobes and installing a convenient lavatory in the large clothes closet. When we went to California a year later Father Taylor moved to a room in the Madison Club where he seemed to be happy and contented.

This appears to be an appropriate place to tell you something about Mr. Walter F. Taylor. He was a quiet, kindly, genial gentleman. He made friends easily and had many. He was the personification of neatness and orderliness. Everything he had to do with was always in its proper place. He was always busy and the only things he did for recreation were little jobs of upkeep and repair about the house.

Bertha's father was born Walter Frank Cornwall, in Knoxville, Tennessee on August second, 1856. His father was killed while a soldier in the Civil War. Walter's mother had died at an earlier date, and after the death of his father he lived with maternal grandparents and assumed their name, which was Taylor. When Walter was still a small boy his grandparents moved with him to Schoolcraft, Michigan where he grew to young manhood and went to school. When he was a young man he served an apprenticeship as a carriage finisher

Grandpa Taylor with
Warren and Juddy.

in Three Rivers, Michigan. He was later employed at this craft in Jonesville where he worked for the same firm for fifteen years. During the time he spent in Jonesville he met and married Helen Stuart. Walter and Helen and their small daughter Bertha May moved to Detroit where Walter had a brief try at the grocery business. He then took a position as salesman for the Johns Manville Company of Milwaukee and the family moved to Madison, Wisconsin.

Father Taylor sold insulating materials for the Johns Manville Company. His customers were the railroads, and his territory extended from coast to coast and from Mexico City to Manitoba. He was a very busy and successful salesman but was away from home most of the time. The company eventually called him to Milwaukee to an administrative position in the sales department but Mr. Taylor became uneasy under the confinement of office work and requested that he be sent back "on the road." He was assigned to a much smaller, undevelope sales area which included Wisconsin and parts of Iowa and Illinois. He built this hitherto neglected territory into an excellen market.

Living in Madison, Bertha attended high school where she graduated as class valedictorian. She then attended the University of Wisconsin, where she majored in music. After completing the university work Bertha taught piano and when we were married she was earning more money than I.

The first year after our marriage in 1909, we lived wit Bertha's parents at 1811 Jefferson Street in a residential subu of Madison called Wingra Park. The following year we moved to an apartment in a duplex house which her father and mothe had just built. We occupied the first floor and Father and Mother Taylor lived in the apartment on the second floor. The third floor had two rooms - one for each apartment - which were convenient as guest rooms.

At Christmas time in 1921, Father and Mother Taylor were much disturbed when he received, without warning, a letter from the Johns Manville Company announcing that, as a reward for his many years of service, he was to be retired at half salary on the first of the following year. This was a serious blow as half of his salary was hardly enough to live on. But this wonderful couple was neither down nor out. They rented the apartment in which they had been living and moved into the rooms on the third floor. They mortgaged the duplex house, purchased a vacant lot in a popular, growing suburb and began the construction of a house which Mrs. Taylor had designed. A student draftsman was employed to make the drawings.

Father Taylor's experience with Johns Manville products made him an excellent supervisor of construction. The first house was sold at a good profit before it was completed, and a second house was immediately started with the same team work. Presently they had several homes under construction at the same time, each designated with an ornamental sign as a "Taylor Made Home." Within a year they had more requests than they could handle, from people who wanted "Taylor Made Homes." By this time this remarkable team was making more money than Mr. Taylor had ever made as a salesman. Their houses were beautiful residences, and the women liked them because of Mother Taylor's ideas, particularly in kitchens and closets.

The death of Mother Taylor in 1925 brought the construction business to an end as Father Taylor did not have the heart to continue without his partner and architect.

In the summer of 1930 Father Taylor made a trip to the towns in Michigan where he had lived during the early part of his life. He attended a large homecoming celebration in the town of Sturgis and saw many old friends and acquaintances. Among them was Stella Sturges whom he had known when she was a girl in high school in Sturgis. She had never married and had served for many years as secretary for her father, who had recently died. She had continued to live in the Sturges family home and to look after her father's many business affairs.

Bertha and I were pleasantly surprised when Father Taylor, on his return to Madison, rather shyly told us that he was to marry Stella Sturges. They were married in the fall of 1930 in Marion, Indiana, and lived happily in the Sturges home in Sturgis. Father Taylor was a very busy, contented man, attending to the many business affairs of his wife. At the time of their marriage they had agreed to keep their individual financial affairs quite separate. When Mrs. Taylor died in 1943 she left a large estate to various civil, religious and charitable institutions. Much of it went to the support of the Sturgis Hospital, for which she had built a beautiful home for the nurses, before her death. She provided that the Sturges family home should ultimately be used by the City of Sturgis as a home for elderly women but it would be used by her husband for the remainder of his life. Father Taylor died in Sturgis in 1945 at the age of 88 years.

February 4, 1959

Dear Family,

In the autumn of 1925 I had a surprising and shocking experience which should be included briefly as part of the record. Perhaps it will help someone else to sail through troubled waters.

The National Academy of Sciences held its fall meeting in Madison. Dr. Leith, a member of that exclusive organization, talked me into presenting a paper before the gathering. I chose to talk on "The Geologic Role of Dilatancy." I was always nervous about public speaking and went before the audience with a complete manuscript of the talk as well as the usual set of lecture notes. When I stood before the assemblage I realized that I felt ill. Abdominal cramps, cold hands and feet, and difficulty in enunciation. I decided to read the paper but found I could not. I knew this was no time to quit and walk out, so I leaned on the lectern and slowly told them about dilatancy. It was a nightmare, but I finally finished and walked out of the room.

A good friend, Professor Matthews of the Chemistry Department, saw that something was wrong and followed me from the room. He walked with me to my office and then drove me home in my car and called the doctor. Bertha was not in the house at the time but arrived just as I was leaving with the doctor to go to the hospital. I was ill and frightened and, of course, thought I was through.

The best possible medicine came a week later in the form of a letter from a very good friend and former faculty associate, Max Mason, President of the University of Chicago. He wrote that he had experienced the same type of nervous collapse at the time of his first lecture as a faculty member at Yale. He also had been carted off to the hospital as badly frightened and worried as I. If Mason could recover and become a university president, I felt that there was still a busy life ahead for me!

I resumed University duties at the opening of the second semester in February. The invitation to try a year at the University of California was renewed and seemed to be a good idea so I secured a leave of absence for 1926 - 1927, and the Mead family planned to go to California.

Before we start for California there is another deviation in this story, one which I am sure should be a matter of recor (This series of letters is beginning to take on the digressive characteristics of Tristram Shandy.)

My old friend and freshman mathematics professor, Charles S. Slichter, had recently been made Dean of the Graduate School at Wisconsin, succeeding another old friend, Dean George Comstock. I passed Dean Slichter on the campus one day as he lunged along in his characteristic fashion. He turned and called to me and inquired as to why I had never taken my Ph. D. degree. He said that he had looked at the records and found I had taken all of the graduate courses required, and mor He suggested that I send one of my published papers to him as a doctoral thesis and plan to come up for a doctoral examinati Slichter said with a grin that it was not right for me to go to California as a plain professor without a doctor's degree.

I explained to the Dean that I had considered applying for a degree a year or two earlier but had failed to pass the required French examination. I told him that I could read scientific French adequately and that my failure to pass the examination was due to a rather comical incident pertaining to "Puffy" Reed.

Puffy Reed of the Romance Language Department was a neighbor who lived near our home in Wingra Park and owned an ill-mannered collie dog. This dog had frightened many children and even injured one. I recalled one particular Saturday morning, when there was loud shrieking and commotion outside and my wife called to me that Puffy Reed's dog was attacking little Lorraine Brown next door. I picked up a .32 automatic from my field kit and darted out, only to find that the shriekin women had frightened away the dog.

However, with the gun in my hand, I went to the home Professor Reed. He opened the door in response to my knock. I told him that my mission had been to destroy his collie dog, which had attacked the little girl. I said I had small children of my own in the neighborhood and that if he did not have the dog destroyed, I would do so at the first opportunity. He said, "The dog will be destroyed," and slammed the door in my fac

I had an appointment for my French examination on the following Monday morning. With a book on geology in the Fre language under my arm, I went to the French Department in South Hall and found that my examiner was to be Puffy Reed! He opened the book, and I translated a paragraph. He turned to a different page and I translated a second paragraph and then a third, after which he remarked that I read French very well; so I thought the affair was over. However, he turned to the preface, in which the author indulged in beautiful flowery, literary French, quite different from the scientific French I was supposed to be able to translate. I told Professor Reed I could tell him what was said in the introduction, but that I couldn't make a detailed translation. He said that a brief translation was all that was necessary, and I remember to this day what the preface said.

But I still was not over the last hurdle! Professor Reed took his pencil point and indicated a little two-letter word which French writers distribute with a salt shaker and asked me, "What does this word mean?" I told him that I didn't know what the little word meant all by itself, but that I could translate the phrase and the sentence. He said, "Ah, but if you do not know what that word means, you cannot pass your French examination. You take the book and study it for a couple of weeks and come back." I told Professor Reed to go to hell, and left.

Slichter was much amused at the story and said that Puffy Reed had been a problem to the administration for some time. A few days later, when I happened to meet the Dean again, he stopped to announce that I had passed my French examination the previous day! He explained that he had talked with Professor Winchell over the telephone. Winchell, a member of the Geology Department, was a recognized French scholar and had received his doctorate at the Sorbonne. He assured Dean Slichter that I had a thoroughly adequate reading knowledge of scientific French. I sent the Dean a reprint of the paper I had written on the "Manner of Occurrence and Origin of the Bauxite Deposits of Arkansas" as a possible thesis.

I had not taken this whole matter too seriously. So I was somewhat surprised sometime later when I sat down with the usual group for luncheon at the University Club to have them express considerable amusement over the fact that Warren J. Mead was included in the printed list of candidates for the doctoral examinations, along with the names of the Examining Committee, two of whom were at the luncheon table. I was kidded daily by this committee, who threatened me with dire promise of tough questions. When the day finally arrived, the committee filed into Professor Leith's office in Science Hall (Leith was away) and faced me across the oak table. Each one was loaded with questions and eager for the slaughter. I knew that each could ask me questions that I could not answer, just as I could ask each of them difficult questions.

Professor MacCaffery, Head of the Department of Mining and Metallurgy, addressed the Chairman to ask a question. Mac said that he had had little experience in doctoral examinations and would like to know the precise duties of the Committee. Was it the duty of the Committee to report to the proper administrative authorities whether or not, in their opinion, the candidate was qualified for the degree - or was it the duty of the Committee to examine the candidate? The Chairman though it was a good question; he said that he had never considered it in quite that light but felt it was the duty of the Committee to report their opinion. In order to form an opinion, it was generally necessary to examine the candidate, but he didn't feel that the examination was a required part of the ceremony. There was an interesting debate on this matter, but the Committee finally decided that the examination might or might not be necessary, whereupon my good friend MacCaffery introduced a motion to the effect that it was the opinion of the Committee that the candidate was thoroughly qualified for the degree of Doctor of Philosophy and the motion was passed! Several members of the Committee looked sadly disappointed. I suggested that since the matter was settled it might be interesting to ask everybody questions, and we spent several hours discussing a great variety of scientific matters more or less related to geology. In June I received my degree of Doctor of Philosophy just twenty years after I had been awarded the degree of Bachelor of Science. I could embark for California as Dr. Me not just plain Professor Mead!

It was great fun to plan and prepare for the year in California. The whole family would go. We would travel in ou Franklin air-cooled automobile. There were many details to attend to, including renting the house. But of course something had to turn up like a dark cloud on the horizon, and here com still another digression in the story!

Early in the spring I received a letter from Mr. E. S. Fickes (the Vice-President of ALCOA about whom you've hear before), with a request and an opportunity I could not ignore. would postpone our trip until autumn and we would have to tra by train. Too bad!

Fickes said that the company had entered into an arran ment with the Russian government which involved investigation of Russian bauxite resources. I was asked to direct the enterprise, secure the necessary staff of assistants, and go to Eur with them. It would mean spending most of the summer visiti

Roadside lunch and Franklin car on way to California.

the important bauxite localities in Europe and getting the work started in Russia. Fickes anticipated that I would have to return to Russia the following summer. I agreed to undertake the job for the same per diem remuneration I had been receiving from ALCOA on the various damsite jobs and not to ask for the higher rate that foreign work generally implied.

I proceeded to secure a passport and arranged for the services of Evan Just, a graduate student, Gilbert Wilson, another graduate student (now Professor of Geology at the Imperial College of London), and John McCarter, my personal secretary (now Professor of Neuro-pathology in a mid-west medical school).

I assembled the necessary equipment, including my first moving picture camera, and turned a couple of consulting jobs over to others. After everything was apparently set for departure, I received an astonishing telegram from Mr. Arthur V. Davis, President of the Aluminum Company of America. Mr. Davis apparently had inquired into the details of the job to be done in Russia and found they had employed a college professor named Mead at what he considered an extravagant fee. Apparently Mr. Davis didn't know of the work I had already done for the company on various damsites at that same fee. At any rate, Mr. Davis wired me pleading the necessity of economy and suggested that I should be pleased to take this trip for my expenses and a token monthly salary. I immediately wired Mr. Davis asking his permission to withdraw from the enterprise, saying that I had never knowingly worked for anyone who thought I was being paid more than I was worth and was happy to escape that situation, although the incident had been expensive. I told Mr. Fickes that it would be unfair and unfortunate if the people I had employed could not be used, and was happy to be told that the entire group would go, under the direction of Mr. E. C. Harder. (Harder, an old acquaintance and fellow student at Wisconsin, later continued with the Aluminum Company of Canada and became one of its vice presidents. He is now retired and living in Montreal.)

Last leg of California trip, across the Bay to Berkeley.

The cancellation of the Russian trip was a momentary disappointment; but on the whole it was fortunate, as it made possible an early departure for California with the entire family by automobile. This was a memorable trip that we all enjoyed immensely.

At long last, on the morning of the twenty-first day of July, we were all packed, assembled in the Franklin car, and ready to go. It was exciting, it was wonderful, and a thick volume could be written about the trip. I will find it difficult to keep the story from getting much too long. We had the sixteen millimeter movie camera I had purchased for the Russian expedition, and we have reviewed our California trip many times with these pictures.

There were five of us: Bertha, who was really in command of the expedition; Warren, almost 14 years old; Judson, nearly 9; and Jeremiah, not quite 6; and, of course, the man who drove the car and wrote this letter.

We carried with us only what we needed on the trip, shipping the important luggage ahead to Berkeley. We didn't try to make or break any records for speed or distance, just rambled along and enjoyed every mile. Maps were sketchy, there were few surfaced roads, much dust in dry weather, and much mud when it rained. No motels or tourist cabins so we spent the nights at hotels - good, fair, indifferent, and pretty awful.

Each day we had a mid-day lunch at the roadside; usually milk, crackers, cheese, and fruit. The first stop for lunch was at La Crosse in a park by the river. The boys had their first look at the Mississippi, the first of many thrills for them

The great western plains were impressive but became monotonous. The Black Hills were interesting, especially an overnight stop at Deadwood. This was the first somewhat mountainous country.

The Claremont Hotel,
our home for a year.

One day as we drove along I could see the Big Horn Mountains ahead, like a low bank of clouds on the horizon. As they loomed higher and higher I wondered who else would notice them. Judson, sitting with me in the front seat, was looking steadily ahead. He finally turned to me with a look of awe and whispered, "Dad, are those mountains?" I nodded my head and placed a finger over my lips to indicate it would be fun to let the rear-seat passengers discover the mountains too.

We spent the night at a town at the foot of the mountains and the next day drove over the pass and down the west side, through Ten Sleep and Buffalo. This was one of the most interesting days of the trip and another big thrill for the kids.

At Cody, Wyoming, where everything has to do with Buffalo Bill, we had lunch in a restaurant. In the centre of the dining room was a mounted horse fully adorned with saddle and bridle, supposedly the horse of Buffalo Bill. You can imagine the laugh that was generated when Jere piped up in a clear loud voice, "Was Buffalo Bill a horse or a cow?"

We saw the sights in Yellowstone Park, stopped overnight in Butte, Montana, and took Warren underground in the Poser Mine. Had a comfortable brief rest at the Davenport Hotel in Spokane. We enjoyed the fine highway along the Columbia River and finally reached the Pacific Ocean at Crescent City, in the redwood country. Here we had the added thrill of a shipwreck, a freighter which had very recently gone onto the rocks some distance out from the shore. We spent the night at Crescent City and on the following day had an amazing drive through the magnificent redwood forest. We took our time and got out to see these giant trees and, of course, to take pictures. The trip down the coast was unhurried. We drove along the road down the peninsula to the vicinity of the present north end of the Golden Gate Bridge. I believe we boarded the ferry at Sausalito, and proceeded across to Berkeley, and drove up to the old Claremont Hotel, which was to be our home for nearly a year, arriving on the fourth day of August.

We became established in very comfortable quarters in the Claremont, a large, wooden structure with beautiful grounds and gardens and immense porches. There were a few days of adjustment, with many things to be seen. We looked at schools for the boys and found that the two younger ones could go to the John Muir School, a public school not far from the hotel. Warren was to enter Berkeley High School.

After a day or two of getting settled at the Claremont, I went over to the University of California to find out just how and where I was to carry on my academic activities for the coming year.

My good friend, Dr. Andrew Lawson, was away from Berkeley on a trip to Africa for the first semester, and the Department was in charge of Professor George Louderback. I should tell you at this point that the Department of Geology wa housed in an interesting old building called Bacon Hall. This building had a circular central area containing museum cases on the first floor. This central area continued as a huge open well to the roof, encircled by balconies on the second and third floors. The second floor was devoted to offices, and from this floor one entered the large general lecture room. The third floor was largely storage rooms and laboratory space, particularly for work in paleontology, which was a prominent activity of the Department.

The departmental staff consisted of Professor George Louderback, a petrographer, whose principal activity was campus politics; Professor Bruce Clark, a paleontologist and strati grapher much interested in structural geology; Professor Ralp Chaney, a paleobotanist of international fame; Professor N. E. Hinds, a geomorphologist; Professor Talliferro who was, I believe primarily interested in economic geology; Professor Per Byerly, a seismologist; and a professor of mineralogy whose name I do not recall at the moment.

Now begins a rather amusing and perhaps surprising story or series of anecdotes. I reported to Professor Louderback, acting chairman of the Department and was not impresse with the warmth of his greeting! He did not welcome me but said he was glad I had come early because it would be difficu to arrange office space at a later date. He told me, however, that having arrived early I could have a choice of desks; he conducted me into a room with a number of closely spaced small desks, explaining that this was the room used by the graduate students, and said that I could use any desk I might choose. He assumed that I would like to have one near the window.

This gave me a clue as to what to expect from Louderback. I told him that one of the little desks would not be adequate, that I would need office space, that I had brought much material with me that I would not leave in so open and public a place as this, and jokingly suggested that if they were that crowded, perhaps I could get a tent and put it up outside. He seriously turned down the tent suggestion and said that he would take up the matter of space with the Dean. Then we turned to the matter of a classroom, and Louderback said there was no classroom space available for me in Bacon Hall; but he had talked with the Dean of Engineering and would show me what was available in the Engineering Building, where we went next. I was taken upstairs to a drafting room which contained drafting tables and stools and no blackboard. I didn't argue the matter; I told him I would miss a blackboard but that perhaps we could get a portable one.

We returned to Bacon Hall and I started to get acquainted by calling on the members of the Department. (Louderback had not offered to show me around the Department.) I found Professor Bruce Clark and received an enthusiastic welcome. I told him that Louderback had said that there was no office space for me and had offered me a desk with the graduate students. Professor Clark was shocked and astonished. He told me that a beautiful office next door to Louderback had been vacated by Professor John Buwalda who had gone to the California Institute of Technology, and he had assumed that I would have that office. I later found that this office had been reserved for Professor Louderback's student assistant!

Bruce Clark said I was welcome to use a storage room on the third floor, where there was a little kitchen table and chair. I found this room was lined with trays of fossils, but it did have a table and a chair, and so it became my official office in Bacon Hall.

I called on Ralph Chaney and told him, with a grin, of my experience in trying to get an office and a classroom. Ralph explained what I had already guessed, that Louderback was trembling with the fear that I would accept a permanent position in the Department and perhaps succeed Lawson as Chairman. For this reason it would be unfortunate if I acquired any good impressions of the life of a visiting professor at Berkeley.

One very interesting individual in the Department was the Department Secretary. He was a gray-haired man who had served Lawson for many years. He said that I would need a mail box, gave me a gummed label with my name typed on it, and suggested that I put this on the mail box that had been vacated by Professor Buwalda. I told him that I thought it would be better if he did this chore. The next day he apologetically told me that when he was about to place the label on the mail box, Professor Louderback had come by and told him that the box had already been assigned to his (Louderback's) assistant. So for several days my mail accumulated on the window sill and on the floor, until Ralph Chaney heard the story and put my name with his name on his mail box.

One day I met Professor Hinds in the corridor, and he asked me where I would hold my classes. I told him that I had been taken to a drafting room in the Engineering Building by Louderback and informed that I must have my classes there. Hinds swore a bit and then took me into the petrographic laboratory. This was a beautiful, well-lighted room on the first floor, with large tables and many chairs. He told me that this room was not used at all in the forenoon of any day and that I was free to use it for any classes that I wished.

Classes were about to begin and enrollment was going on when I began to have numerous calls from students who had expected to take my courses in structural geology and metamorphic geology. They said they were prevented from enrolling in these subjects because the hours assigned to my classes were the same as the hours for the only course required of all advanced students and given by, yes, you guessed, Professor Louderback! For the moment it appeared that I had encountered an impossible barricade. I asked the students if they ever had 8 o'clock classes at Berkeley and found that there were none. I asked them how they would like to have 8 o'clock classes in metamorphic geology and structural geology. When classes began (mine at 8 A.M.), I had a most gratifying turnout of students and faculty members. When I encountered Louderback in the corridor later, he told me that he hoped I understood that classes began on this day. I told him that I did and that I had already met my first class. He asked how many students I had, and I told him that I apparently had the entire department. He immediately asked if I had changed the scheduled hour of my classes, implying that that would be just too bad. I told him that I was forced to do so because of a mistake in the published schedules which brought about a conflict with his required cours
He explained that I couldn't change the hours without the permission of the University Committee. I explained that I had already changed the hour, that we were having the classes at 8 o'clock, and that if he wanted to change it with the University Committee, he could try.

So that was how my academic life at Berkeley began. Louderback was tossing all of the impediments he could devise in my path. I was having a wonderful time, and the entire Department was entertained and interested. I ran into one other matter of Louderback's contriving. I had brought with me a number of thin sections for the microscopic study of metamorphic rocks, but I had not brought the specimens or thin sections of standard unmetamorphosed rocks, presuming that I would find these at Berkeley. I inquired of the student assistant who had been assigned to help me about such specimens and thin sections, and he said that there was an excellent set which he would get for me. However, the following day he approached me apologetically and said that the set was in Louderback's office. I told him not to bother to tell me what Louderback had said, that I would get along without the material.

My official office in Bacon Hall was the little third floor room lined with trays of fossils. I used this to prepare lecture material and occasionally met students there but I also rented a room in the Campus Faculty Club as a more presentable office. The Club was only a very short distance from Bacon Hall. I usually had breakfast and lunch at the Club. (My breakfast time was too early to have it with the family at the Claremont, and I enjoyed and profited by the walk from the hotel to the Club before breakfast.) At times, when I had evening classes, I spent the night in my office-room, this being a very convenient arrangement.

And so, in spite of Louderback's amazing campaign of discouragement, I spent a thoroughly enjoyable year as a Visiting Professor at Berkeley. I had a large and enthusiastic group of students, I worked hard and it was fun. The boys became happily established in their schools and Bertha found enough to keep her busy and entertained. San Francisco was a wonderful place to shop and she just couldn't keep away from Chinatown. We are still using, daily, the lovely coolie dishes she collected there.

My teaching at California had a brief, unavoidable interruption in the late fall. The litigation at Butte between the Clark interests and Anaconda was finally called for trial in Butte in November of 1926. The trial did not require many days, but there was no way short of illness or death that I could avoid it. Although this necessitated my absence from classes I had an excellent substitute who could pinch hit for me. Dr. Edward Hawley and I had been working on a laboratory research problem on the origin of petroleum, supported by a grant from the National Research Council. When I went to California, this entire research operation, including Dr. Hawley and his wife, was moved to Berkeley for the year. We had arranged for space and equipment, so the work proceeded without a break.

Thus I had Dr. Hawley, who was competent to take over my classes, available as a stand-in. And so I left for Montana.

We all gathered at our headquarters in the New Finlen Hotel in Butte, and the trial got promptly under way. Dr. Lawson had hastened back from his trip to Africa. There were lengthy preliminary conferences with the legal staff that lasted far into the night in a large smoke-filled room.

The first witnesses were "witnesses of fact," as distinguished from "expert witnesses." A witness of fact does not express opinions; his job is to testify about the geography of the situation, introduce the mine maps, models, and diagrams, and set up the physical frame of the case. I was to be an expert witness and I had heard much about the trials and tribulations of expert witnesses in earlier similar cases. I had heard, for example, that Professor Emmons, the eminent economic geologist from the University of Minnesota had been completely confused under cross-examination and hardly knew his own name I had also heard that the State Geologist of Missouri, "Ajax" Buehler, had been so rattled under cross-examination that he had been unable to identify a huge specimen of zinc ore, after qualifying as an expert in zinc mining.

So I was badly worried over the prospect of testifying. Our good lawyer, Bill Colby, did not make matters easier for me when he told me that I would be the first expert witness and that they were placing much dependence on my testimony. I knew that I must go on the stand the following morning. I could not sleep at all that night, just lay there and worried. In the morning I managed to drink a cup of coffee for breakfast, but that was all. We were herded into the usual morning conference. At the beginning of this I picked up my brief case, whispered to George Roddewig, "Come on George, let's get out of here," and walked out of the room with everyone looking and wondering. We walked the streets of Butte for one solid hour and then went to the Courthouse. I felt like the condemned criminal about to enter the gas chamber! There was a brief matter of the usual formalities and then I heard them calling for the first witness, Professor Warren J. Mead.

This whole event is indelibly engraved in my memory. The court room was packed with all the top men in mining engineering and mining geology. Waldemar Lindgren was there, Richard Hunt was there, both as expert witnesses on the Anaconda side of the case. There were many others whom I recognized but will not name. I frankly confess that I was never so thoroughly frightened in my life. When the attorney started to "qualify" me by asking questions about my past experience, I answered him and was actually surprised that I could talk. As the questions went on, I was further surprised that I could think. Finally the opposing attorney waived further questions about my qualifications (as is usually the case), and Colby plunged into the matter of the geology of the Poser Mine. To my complete and utter astonishment, I heard myself say to Mr. Colby, "May I suggest that we could save the time of the court if you were to ask me a general question about the geology of the Poser and Badger Mines and later supplement my answer, if necessary, with questions covering matters I may have omitted?" Colby's face lighted up with a smile of amazement; he gladly accepted my suggestion, and the dour old judge on the bench sagely nodded his head.

This happened a little after nine o'clock. The next thing I was aware of was the thumping of the judge's gavel at twelve o'clock and his announcement that the court would recess until one-thirty. I had talked steadily, without pause or interruption, and without notes, for about three hours.

After the judge had left the bench and gone back to his chambers, three men rose up from a little table down in front of me, all with their hands or fists in the air. These, I found, were the court reporters. I was told that when the first reporter was relieved by his replacement, the second man asked the first man to stay there. Later, when the third man came in, all three of them remained.

They all came up to me and one of them said, "My God, don't you ever breathe?" "What's the trouble?" I said, "Did I talk too fast?" "No, you didn't talk too fast, but you didn't pause at all!" The third man, who appeared to be in charge, stepped closer to me and said, "The fact is, we haven't got a damned thing for the record."

I asked why they hadn't interrupted me and asked me to slow down. He said, "In front of that judge? He would have thrown us all out as incompetent." So, I remarked that I could try to rectify matters after the afternoon session.

Court resumed at one-thirty and I continued my testimony for the remainder of the afternoon. This, of course, involved the supplementary questions from Mr. Colby. I carefully dictated my testimony to the court reporter so that he could produce a good record. At five o'clock, when court adjourned, I was secretly escorted up a winding stairway and into the reporters' work room where I spent three hours redictating my forenoon's testimony; and I honestly don't believe I left out a sentence. No one ever knew that the court record of my testimony was not the record taken down while I was testifying.

At eight-thirty that evening I went back to the hotel and then to our favorite restaurant, where I enjoyed a huge dinner, happy and relaxed. I could hear Birch, Colby, Lawson and Simpkins discussing the case in the next booth and was pleased to know they were satisfied with my effort. That night I enjoyed a thoroughly untroubled sleep.

The next morning I resumed the witness stand in a continuation of direct testimony, which was completed by noon, but I still had to face the ordeal of cross-examination. During the noon recess, while the others were milling around, I found Mr. Colby and told him that I had never met the Anaconda lawyer who was about to cross-examine me. This man was a real fighting Irishman. He had been shouting at the witnesses in a way that I knew I would not enjoy, and he had a reputation for confusing and brow-beating witnesses under cross-examination.

When I told Mr. Colby that I had not met Mr. Kelly, he said, "Well, come here," and so I was introduced to the rather heavy-set, heavy-faced attorney.

I wanted to appear nonchalant - though in fact I was any thing but - so on the spur of the moment I said, "I suppose you will be asking me a lot of questions this afternoon?" Mr. Kelly replied that in the course of his duties he felt that that would be necessary. I asked him if it would be proper for me to ask him just one question at this time. He replied that if the question were within the bounds of professional ethics, he could hardly object; so I inquired if it would be all right for me to shout back at him as loud as he shouted at me. He looked surprised, as did Mr. Colby, and replied that he hoped he had not been shouting at the witnesses. And certainly if he ever shouted at me, he said, he could not deny me the privilege of shouting back. I thanked him and told him, with a smile, that I felt relieved.

The cross-examination started in a most courteous and gentlemanly fashion. I answered a few simple questions, and then we finally got into more important matters. Mr. Kelly pounded on the table: "Do you mean to say ----?" I leaned forward, grinned at him, and shouted just as loud, "That is exactly what I mean to say!"

The lawyer then dropped his voice and got back to a more gentlemanly demeanor. He followed up another line of questioning, but not very far, then dropped it and shifted to another. Presently he was mopping his brow, which I thought was strange, because it didn't seem warm in the courtroom. He started to look through some notes or papers which he had with him and was promptly interrupted by the judge with the admonition that he must proceed without delay; and that if he was not prepared, his client must suffer!

My cross-examination lasted only a little over an hour and accomplished nothing. We had all expected that it would take at least two half-days to complete, but the lawyer wiped his brow and said, "The witness is dismissed."

I left the stand in amazement and was promptly joined in the corridor by Colby, who was in stitches. Colby said, "Mead, you've ruined Kelly. When you hollered back at him, it threw him right out of his mental stride, and he was completely unable to regain his footing." He wanted to know how I ever happened to think of asking Kelly if I could shout back at him. I assured him that it was not premeditated but had been entirely on the spur of the moment, but my attitude apparently was more of a shock to Mr. Kelly than I had thought, because he took no further part in the cross-examination of our witnesses.

The Anaconda Company had retained Dr. Waldemar Lindgren, a geologist of international reputation, and Richard Hunt, a prominent mining geologist and close friend of mine. Both of these men had spent much time in preparation of the case. Both were present in the courtroom but neither was called to the witness stand by Anaconda. Members of the Anaconda geological staff were called to the witness stand but the only geologist from outside the Anaconda staff who testified as an expert was a well-known economic geologist from one of the Ivy League universities. He appeared on the scene only a very short time before the trial, in contrast to the rest of us who had been working on the case for nearly three years. We were astonished when he was called to the witness stand. His testimony was confined exclusively to what he claimed to have seen in 1366 raise, which was the most crucial mine opening involved in the case. (I should explain that a raise might be thought of as an underground shaft. It is a vertical or inclined opening extending from one mine level to another and is called a raise because the opening is made from below by blasting and digging away the rock.)

The raise in question, 1366, had been driven from the ore body in the Badger Mine, upward to the Poser Mine and followed a branch of the Poser vein. In our opinion, this proved irrefutably that the Badger ore body had an apex in Poser ground. (An apex is the term applied to the appearance of a vein at the surface of the ground.) We were flabbergasted when this surprise witness dramatically, and with an air of complete assurance, testified that 1366 raise had been driven entirely on a seam of gouge, and that there was no vein matter whatever in the raise. That night we all made a pilgrimage to the Badge Mine. We climbed once more through the 1366 raise and reassured ourselves that there was ore and copper mineralization throughout it and that the testimony of the new expert had been totally in error. The most charitable explanation that we could give was that he had testified about a different raise, that followed a fault-gouge, and erroneously believed that he was mapping 1366 raise. All raises are clearly identified by large printed signs both at the top and bottom. Perhaps the poor fellow couldn't read numbers or possibly the signs were accidentally changed.

The testimony of the Professor from the East ended the case for the Anaconda Company and we began to understand why Dr. Lindgren and Dick Hunt had not been asked to testify. Perhaps they had mapped the real 1366 raise and had seen what we knew was there.

After the testimony in the trial was completed, and prior to the presentation of arguments by the attorneys, the judge announced that he would like to make a trip underground and see some of the things in controversy. He asked that each side of the case appoint one expert to accompany him. Anaconda sent Reno Sales, their chief geologist, and we unanimously picked Dr. Lawson as the most experienced conductor of field expeditions in our group. Lawson returned to the hotel the following afternoon. He came swaggering in, with each thumb pulling a loop of red suspender strap out of an armhole in his vest, and chirped, "Gentlemen, the case is on ice." He went on to explain. Having made the trip down into the mine, the judge had asked the two official guides what they would like to have him see. Lawson had replied that the only matter of geology in which the two sides differed as to facts was the 1366 raise. That all of our witnesses had testified that the raise followed a vein, and of this we were very sure. And that the defense witnesses had testified that the raise followed only gouge. At this point Mr. Sales produced his notebook and said that Lawson was quite wrong in his statement. The raise did indeed follow a vein and Sales produced his map of the raise which showed the vein. The judge then remarked to Lawson that if Mr. Sales agreed there was a vein in the raise, there would be no reason for him to climb through the raise, and Lawson agreed that this was true. After this they walked about to various places, the judge asking unimportant questions, and finally came home after a short time in the mine. Lawson and all of us, including the attorneys were jubilant. Sales had admitted there was a vein in 1366 raise!

Some months later, when the court again sat to hear the arguments and summations of the attorneys, our attorney, Mr. Higgins of Denver, opened his argument with the statement that the case hinged largely on whether or not there was a vein in 1366 raise. He said, "Your Honor, you will recall that when you were underground ---- ," but he got no further. The judge raised his hands and shouted that there would be no reference whatever to his trip underground or to anything that had occurred or had been said while they were in the mine. That he had not known where he was underground, not being an expert, and that no one had been under oath!

Needless to say, the decision handed down by the eminent court almost completely favored the Anaconda Copper Company, and Butte became a one company town.

Perhaps our attorneys should have called Dr. Lindgren and Mr. Hunt from their seats in the courtroom to testify about 1366 raise. I wonder what the judge would have done about that!

After the brief interlude of the Butte lawsuit, I was back to a steady grind of work at Berkeley. The boys were busy in school, but we all had a lot of fun, too, with many excursions to interesting places. The Golden Gate Park in San Francisco had great attractions for the boys. On Saturday, the fourteenth of August, ten days after we first came to Berkeley, we spent the day at the park while Bertha went shopping. She joined us for lunch and gave us a big surprise. She had had her hair cut! No more four-foot braids, coiled on top of her head!

In December we drove to Carmel for a weekend and had a lot of fun. On the fourteenth of December my mother arrived from Wisconsin and remained with us at the Claremont until she left for home on June sixteenth. It was wonderful for all of us to have Mother with us. I am sure she was happy at the Claremont. She loved to be with Bertha and the boys and she found a group of congenial elderly women living at the Claremont with whom she could play bridge. It was good for Mother to get away from Plymouth as she had left a sad and lonely house. Father had died in 1926 and her mother had died in July at about the time we left for the trip West. Her stay in Berkeley made the winter much more pleasant for all of us.

John Guy Fawlkes, Professor of Education at Wisconsin, was also a visiting professor at the University of California that year. He lived at the Claremont and added much to our pleasure there.

The annual meeting of the Geological Society of America for 1926 was held in Madison. I had promised Dr. Leith that I would return for the meeting, so I left the family at the Claremont a few days before Christmas and traveled by train to Madison.

I enjoyed meeting many old friends and associates, but the important event of the trip was an interesting problem at the Newport Iron Mine of the Pickands Mather Company in northern Michigan. Dr. Leith was consulting geologist for the company, but he felt that the problem was outside of his field of experience and training and suggested that they secure my services. I tried to talk my way out of the job over the long-distance telephone, but they talked me into it. Perhaps the $1,000 fee had something to do with my decision. At any rate I traveled north with Dr. Leith and put in a long, hard day at the mine.

The space left by mining the ore had caused subsidenc of the ground above the mine. This movement had developed series of faults which appeared as steps at the surface of the ground. One of these faults had sliced across the main shaft of the mine many months prior to my visit, causing damage t the shaft which had since been repaired. There had been no movement for a long time, and the question for me to answer was whether or not it was now safe to use the shaft again for transportation of men. It had not been used for this since it was damaged, though it had been used to hoist ore.

I studied all the subsidence records and had the staff engineers busy plotting curves until far into the night. I finall told them that it was not safe to move men in the shaft as there would be more movement. This was contrary to the opi ion of all the company engineers, and I was a very unpopular geologist. When I returned to Madison the following autumn, Leith told me I had better keep away from the Newport mine. But some months later another subsidence fault cut across th shaft and really did a lot of damage. Had men been in the shaft at the time there would have been a disaster. So it was "just as I had predicted," and I had grateful letters from the main office of the company.

Professor Lawson returned at the beginning of the sec semester, and his presence added much to my pleasure. He concerned over the question of whether or not I would accept permanent appointment at Berkeley. I told him that Louderba was obviously much opposed to this, but he assured me that derback was enthusiastic about my coming and hoped that I w stay. However, he did say that Louderback was one of the le cordial people he knew, and with this statement I heartily agr

At Berkeley it was necessary each month for each member of the faculty to call at the disbursing office for his check and sign a form stating that he had performed the necessary services. At the time of one of these monthly visits, I met President Campbell in the corridor of the Administration Building. He promptly buttonholed me and took me into his office, asking why I had not called on him. I told him that I knew that he was a very busy man, since this was the year the Legislature met, and I knew how busy the President of Wisconsin was at the time of legislative meetings. He assured me that it made no difference whatsoever to him, as the matter of appropriations was handled entirely by the regents. He said that Lawson had expressed concern about my remaining at Berkeley. I told President Campbell that I was aware that Louderback was opposed to my accepting a permanent appointment, and Dr. Campbell agreed that Louderback opposed my appointment on the grounds that my field of specialization was fully covered by his staff and he badly needed a geomorphologist. I expressed amusement to Dr. Campbell over this statement and told him that my field of specialization was not represented at all by the staff and that he had several geomorphologists.

I returned to Bacon Hall, entered through the rear door, and knocked at the inner door of Dr. Lawson's office. I asked Andy if he had ever experienced the satisfaction of arriving at a conclusion based largely on hunches and theory and then found irrefutable evidence proving that his theory was correct. He agreed that he had and that it was a great satisfaction and wanted to know what I had discovered. I told him that I just had my theory that Louderback opposed my presence at Berkeley confirmed by a statement made by President Campbell, who said that he knew Louderback was opposed to my appointment.

Andy Lawson bristled, pulled first on one side of his moustache and then the other in a characteristic manner indicating extreme irritation, and asked, "Did Campbell say that? Did Campbell say that?" He reached for his coat, put it on, and strode briskly around the corridor in the direction of Louderback's office. I left immediately and, since it was Friday noon, walked home to the Claremont.

After a wonderful weekend with the family, I returned to the University Monday morning. When I went to the University Club for lunch, I was stopped at the entrance by Professor Louderback. He said it was very important that he see me and that he had looked in vain for me on Friday and also Monday morning. I asked him if he had looked in my office, and told him that I hoped he knew my only office was a room that

I had rented at the Faculty Club. I told him I was in a hurry and would have to see him later and brushed by him and went into lunch. After lunch, when I came out of the Club, Louderba waylaid me on the porch. I told him that I was in a hurry an had an appointment I must keep. But he repeated that it was extremely important that he talk to me. He said that Lawson had come to him Friday and told him that I had the impressio that he was opposed to my permanent appointment. I told Louderback that was a ridiculous statement - it was quite incorrect to say that I was "under the impression" that he was opposed to my permanent appointment. I said, "I am not unde that impression, but I know damn well that you have opposed i since the day I arrived. You haven't missed a single chance t make that apparent by doing a great many things which you thought would disturb me."

I told him furthermore that he had provided a great de of amusement and entertainment for me and for most of the staff of the Department and that he could stop worrying, becau I had no intention of giving up a much better job at Wisconsin to accept an appointment in California. Louderback had nothin whatsoever to say. His goatee wiggled up and down as he ope and closed his mouth, but no words came out. That was the l I saw of the professor until a couple of years later.

Lawson appeared to be greatly disappointed at my decision, and I was sorry. I had enjoyed my association with him

The University work and the schools were finished in June, but we wanted to see more of California. Late in June we drove to Yosemite National Park and spent a wonderful week at Camp Curry. That was fun! Warren and I climbed the Ledge Trail to Glacier Point one morning before breakfast and he was surprised that the old man could make it.

On the fifth of July we boarded the S. S. Harvard, car and all, for Los Angeles. Here we saw the sights and then drove to San Diego, where we had a cottage on Coronado Beac for a week. One day we drove down across the border to Tijuana and new sights: a dog race, the "longest bar in the world," and miles of slot machines along the sidewalks.

I gave each boy five nickels to play the slot machines. Jere, being the youngest, thought it was fun to put the nickels in the slot and pull the handle; I don't recall whether or not he won anything. Judson, in his characteristically canny fashi went to his mother and told her that he would give her all of his winnings, making her promise not to give any of them bac to him, no matter how much he teased. Then he proceeded t play the slot machines and was about $1.65 ahead of the game when he spent his last nickel. He pleaded most persuasively to have just one nickel back, but his mother stuck to her promise and refused. Warren played the machines with a good deal of luck, and as I remember, was as much as $2 ahead at one point; but he ended up broke, as do most people.

Young Jere acquired a sunburn that was so serious as to require a doctor's attention. Our cabin was burglarized while we were absent one afternoon, but we had nothing worth stealing. And so a very good time was had by all.

We returned to San Francisco on the S. S. Harvard, drove to Berkeley, packed and shipped our baggage, loaded the car, said farewell to the Claremont, and departed for a rather indirect ramble back to Wisconsin.

We saw Mount Shasta and her sister peaks, drove on to Vancouver, took the boat to Victoria, and saw the sights there. We finally pointed the car eastward and arrived home in Madison, after a good trip, on the twelfth day of August. It had been one year and twenty-two days and thousands of miles. Nothing unpleasant had happened and everyone was well. Our only flat tire was about half a mile from home. The wonderful little air-cooled Franklin car, with a wooden frame, had averaged well over twenty miles to the gallon and had given no trouble at all. Sorry they stopped building Franklin cars. But I had two more before they quit.

On the return trip Bertha and I had discussed finances a bit. The trip to California, life at the Claremont Hotel, and the trip back had cost considerably more than I had earned as a visiting professor. We were close to the bottom of the barrel. The profitable lawsuit in Butte was over. My connection with the E. J. Longyear Company had been terminated some time previously, and the Aluminum Company of America was not at the moment concerned with any big dams; so it appeared that I was out of a job, except that of Professor of Geology at the University of Wisconsin. But a pleasant surprise was waiting in Madison in the stack of unforwarded mail which had accumulated since we left California.

Mr. S. G. Blaylock, General Manager of the Consolidated Mining and Smelting Company of Canada, wrote that he was looking for an economic geologist and asked if I would be interested in accepting a job as consulting geologist for the company. And if so, would I come immediately to Trail, B. C., to discuss the matter.

I promptly boarded a train for a return trip over the same country we had just driven through from the West. Too bad I couldn't have had the letter on the way, so that I could have stopped off in Spokane, Washington, to go to Trail. I went to Trail, saw Mr. Blaylock, and accepted the job. There was enough time for me to go from Trail to Kimberly and have a look at the Sullivan Mine and the type of geology I would be working with. Mr. Blaylock also mentioned a young man named Bert Jure who was at the Sullivan Mine; he had studied geology at the University of British Columbia and would act as my assistant. Blaylock wanted me to size up this young man carefull If I thought he was acceptable material, he wanted Jure to return to Madison with me and enroll for graduate work toward his doctorate, serving as my assistant while there.

I worked with Jure for six weeks and liked him very much, both as a man and as a young geologist. He could hardl believe what I told him when I advised him of Blaylock's plan, but after I returned to Madison Bert and his wife appeared. He continued for the following three years as a graduate student and at the end of that time received his Ph. D. degree.

The acceptance of the consulting job with the Consolidate Mining and Smelting Company in Canada was the beginning of a interesting and profitable experience which continued until I moved from the University of Wisconsin to the Massachusetts Institute of Technology in 1935. You will probably hear more about my experiences in Canada in connection with this work.

I spent about six weeks at the Sullivan Mine that autumn It was immense, with important problems in mining as well as geology. I had recently put in many weeks on the Poser-Badge litigation at Butte. Both sides of the controversy had used elaborate three-dimensional models of the mines in presenting their cases to the judge. These models make it possible to vie the entire mine in three dimensions. All mine openings - the tunnels, drifts, stopes and even the exploratory diamond drill holes - are represented by suitably shaped wood or metal part If a mine could be poured full of molten lead and all the surrounding rock and earth material removed, the lead casting would be like a mine model.

I was sure that a model of the Sullivan Mine would be a great aid to mining and would help in understanding and explaining the geology, so I tried to sell the idea to Mr. Blayloc He had good sales resistance, but I was persistent. After my last effort he returned to Trail, called me from there on the telephone to ask what it would cost, and told me to go ahead. I telegraphed Ed Uren in Grass Valley, California, the best mine-model maker in the country. He had made the models for both sides in the Poser-Badger lawsuit! I caught Ed between jobs, and he accepted my offer and came to Kimberly at once. He made a good start on the construction of the model before I left, continued working on it through the winter, and was still on the job when I returned the following spring.

Ed left soon after I arrived. He had trained a young engineer of the Sullivan staff as a helper. Sam Alexander had learned the art of model making and had become fully as skillful as Uren. As an assistant he had Bob Robson, an English cabinet maker, and they made a splendid team.

The model was an imposing and most impressive affair, at least 10 feet long, 6 feet high, and 4 or 5 feet from side to side. I undertook the task of checking every diamond drill hole in the model to guard against future errors. The drill holes were represented by aluminum rods on which the geology was designated by colored paints.

One important hole was missing. On inquiry, Sam Alexander said it was lying in a drawer with a few other drill hole rods still to be placed in the model. Sam explained that there was something wrong with the data and that he hadn't completed checking it.

I undertook that task. The rod showed a long stretch of red, indicating ore. I checked the rod against the recorded log of the hole and found it correct. I then checked the location of the hole which had been drilled upward from a point in the mine. I checked the direction and angle of inclination of the hole from the original survey data and then inserted the rod in the model in its proper position.

The hole stuck up above the ore and into space like a "sore thumb." It showed a very important thickness of high-grade ore that had never been mined! This was a discovery of immense importance, worth many millions of dollars, and was quite a dramatic dividend of the model.

The fact that this ore had been overlooked did not mean careless mining. It was just failure to visualize the mine in three dimensions, and demonstrated the truth of my arguments for the model.

When Mr. Blaylock flew over from Trail the following day, one of his first questions was, "Are there any more places like that in the mine?" There were a few, and the model paid unbelievable dividends on its original cost. It has been kept up-to-date continuously throughout the thirty years since its creation.

February 8, 1959

Dear Family,

The university year 1927 - 1928 was a busy one, but uneventful. During the spring months I made preparations for the approaching field season in British Columbia where we would be mapping the geology of the Sullivan Mine area. This great mine was one of the largest producers of lead and zinc on the continent and the search for extensions of this ore body presented interesting geological problems. I selected two of the graduate students, Wells Anderson and William Rawles, as assistants, and in early June the four of us - Bert Jure, Andy Anderson, Bill Rawles, and myself - went to work in the Sullivan Mine area.

I remember my instructions to Anderson and Rawles. They were to be very careful about making comparisons of any thing "American" with anything "Canadian." I told them that a very sure way to become unpopular in British Columbia was to brag about the superiority of American things or conditions and that their behavior in this regard was fully as important as their ability as geologists. They faithfully followed these suggestions and consequently were practically adopted by their Canadian associates.

The geological problem of the Sullivan Mine and vicinity was immensely interesting and important, but this is hardly the place to write even a brief treatise on Sullivan Mine geology. But there are two non-geological matters which could be recorded here.

Shortly after starting the work, a special delivery letter was brought to me out in the field by a boy from the office. I sat down on a stump to open this evidently important mail and found that my secretary in Madison had forwarded a letter from the Vice President of the University of Chicago. The Vice President said that he understood that I was leaving shortly for South America (apparently he was under the impression that British Columbia was in South America!) and consequently woul make his letter brief and perhaps abrupt. He went on to say that I had been suggested and was seriously considered as a possible successor to Max Mason as President of the University of Chicago. He would like to have me come to Chicago before leaving for South America and have dinner at the home of Mr. Swift, President of the Governing Board of the University, and meet the Committee appointed to select a new President.

My reaction to this letter was one of amusement. I sat down on a rock and laughed until one of the boys wanted to know what was funny. I was amused at imagining myself leading an academic procession in cap and gown, laying the cornerstone of a new chapel, or presiding over the faculty meeting of the distinguished University of Chicago professors. I promptly wrote a letter to the Vice President telling him that his letter had reached me in British Columbia, where I would be busy for the entire summer. I said I felt sure that after he and the Committee had given more thought to the problem of a successor to Max Mason, they would have a number of candidates much better suited to the position than I. I hoped he would not feel it necessary to renew the invitation, as a matter of courtesy, after I returned in the autumn.

The idea of being President of the University of Chicago seemed to me utterly preposterous, and I gave it no further thought. When I returned to Madison, however, I had a longhand letter from Max Mason urging me to give serious consideration to the invitation of meeting with Mr. Swift and the Committee in Chicago. I wrote Max a reply for him to laugh at, saying that I could picture myself arriving at the home of Mr. Swift, shaking hands with the butler, eating with my knife, and doing other characteristically crude things.

A few days later I had a telephone call from my very good friend Dean Slichter, who asked me to have luncheon with him at the Madison Club. I found the Dean in a very serious and solemn mood. He informed me that he had dined recently with Mr. Swift and others at Mr. Swift's home in Chicago. He said that they were anxious to meet me and felt that I could well be their choice as a successor to Mason.

Dean Slichter then went on to give me a very serious talk in which he said that this was not a matter on which I could use my own judgment, that I was not qualified to decide as to my fitness for the position! He smilingly said that this was "a call," and that if I was asked to take the position, I really had no choice in the matter. I had always had a great respect, and even reverence, for Dean Slichter and his ideas, and I left the luncheon rather disturbed and shaken.

I called Max Mason in New York on the long-distance telephone, and he told me to get on the train and come out and see him. I promptly made the overnight trip to New York and found Max in bed recuperating from an influenza attack. He was most persuasive, talking to me in much the same manner Dean Slichter had used. I told him that I did not like to make speeches and Max said it would be a wonderful thing to have a university president who did not make speeches.

After we were through with the serious talk, Max sent for highballs and we indulged in some reminiscing. Max told me of an incident that occurred in his own family shortly after his brother Vrohman, a Madison attorney, had graduated from law school and been admitted to the Bar. Brother Vrohman came home highly elated over the fact that he had been offered the nomination for District Attorney. His parents were much excited about this, but brother Max didn't say a word. After lunch Vrohman took his brother aside and complained about his lack of interest and enthusiasm. Max said he asked Vrohman just one question: "Why do you want to be District Attorney?" After a long pause, Vrohman smilingly said, "My God, I don't!"

That story solved my problem. Max did not know at the time that he had relieved me greatly and cleared up the whole matter. I asked myself as I finished my highball, "Why do I want to be President of the University of Chicago? My God, I don't!" I felt relieved and relaxed. I boarded the train for Madison and made a longhand draft of my letter to the Vice President of the University of Chicago in which I told him that I was pleased and highly flattered to be considered for the important position of president of his great university. But my education, training, experience, and aspirations were so far removed from the requirements of the position that I was sure it would be a waste of my time and of the Committee's to have me accept the invitation to meet with them. He replied with remarks about the astonishing modesty of my letter and said that it appeared to close the matter.

I have always felt that I had a narrow escape. I have had a most satisfactory and happy existence, and perhaps that would not have been possible had I accepted the invitation to dine with Mr. Swift.

A second communication which arrived while I was in British Columbia that summer was an appointment as a member of the Colorado River Board. There had been much publicity and debate in the newspapers and periodicals on the matter of a very large dam, commonly spoken of as Boulder Dam, to be built on the Colorado River. People discussed whether or not it was safe and practical to build the dam and speculated as to its cost and how this cost would be borne. The matter finally went before the Congress of the United States, and a joint resolution of the Senate and House instructed the President and the Secretary of the Interior to appoint a Board or Commission of Engineers and Geologists to study and report on the engineering and economic possibility of the project. An additional phrase, which stated that no work should be started unless the plans and specifications had the approval of the Board, more than doubled the time, work, and responsibility of the Board.

I have always felt that I was selected as a member of the Board largely because of my ignorance! There was much jealousy and controversy between the states of California and Arizona over the use of the Colorado River, and it was important that the Board be "nonpartisan" or "neutral" in this matter. It was necessary, therefore, to pick engineers and geologists who had no first-hand information and no bias.

The work as a member of the Colorado River Board was a most interesting experience in many ways. It involved a detailed study of the damsites considered and of several related factors which need not be enumerated here. The members of the Board were General William L. Seibert, Chairman; Dr. Charles P. Berkey of the Department of Geology at Columbia University; Daniel W. Mead, Professor of Hydraulics at the University of Wisconsin; Mr. Robert Ridgeway, a prominent engineer who had played an important part in the construction of the water supply system and the subway system of New York City; and myself. I could write a volume of anecdotes about our meetings, but I will limit myself to one or two.

The Board, with commendable wisdom, announced at the beginning that it would hold no open hearings, but that any individual or organization wishing to present arguments to the Board could do so in writing. This decision saved an immense amount of time.

The state of Arizona employed Mr. John F. Stevens, an eminent engineer, at one time Chief Engineer of the Panama Canal, to present Arizona's case. I have always remembered verbatim one sentence in his report which greatly amused me. Mr. Stevens, in a characteristic style, said, "It behooves the Bureau of Reclamation to pluck a few feathers from the wings of enthusiasm and stick them in the tail of judgment."

The Board was scouted and hounded at all times by avid newspaper correspondents anxious to get some tip or pre-information about the decision of the Board. We guarded our meetings and information against leakage with the greatest possible care. Material from the scrap-paper baskets containing rejected drafts of our meetings or of the reports were carefully taken to the incinerator each evening. Our papers and notes were locked in a vault. The report of the Board is dated November 24, 1928, the deadline specified by the Congressional Act. When the report was finished we thought it should be neatly bound for presentation to the Secretary of the Interior. I made arrangements for the binding and sat throughout one long day watching a bookbinder do this job and guarding against any stealthy peek at the contents. We were happy that we were able to say that there was not a vestige of a leak of information prior to the delivery of the report in Washington. I personally was "stuck" with the cost of binding the report, because when I put this item on my expense account, it was rejected with the explanation that the job should have been done in the Government Printing Office in Washington! A fine chance of meeting a deadline that way!

The original concept of the nature of our report, proposed by the engineering members of the Committee, was that it should be a large volume containing all of the detailed plans of the structure, with maps and diagrams. Consequently plans were made to employ a staff of draftsmen and similar help. I suggested that since we were asked only for our opinions and conclusions, this should be all that the report contain, and I finally persuaded the Committee to agree. This way, I felt, the report would be much less vulnerable to questioning and attack by either side of the controversy. My suggestion that all of our detailed facts, maps, and figures be considered as "heavy artillery entrenched in the rear," and consequently available if we were questioned, made a big hit with General Seibert; the published report had only fifteen pages of text and no illustrations, diagrams, or maps of any kind.

When the Board broke up after its final meeting, the General said, "I'll see all of you boys in Washington before the Congressional Committees." I made five dollar bets with all members of the Committee that we would not be called by any Congressional Committee. Technically I won all bets - though I didn't collect any money.

The work of the Committee was by no means finished when the report went to Washington, because the final phrase of the enacting resolution made it necessary for the Board to pass on and approve of all plans and specifications for construction work before such work could be started. We consequently had many meetings in Denver and elsewhere in the are and frequent visits to the damsite during various stages of the construction.

On the whole, this was an extremely interesting and technically profitable experience, but financially it was expensive. The government paid a consulting fee of $50 a day and allowed $6 a day for subsistence. You can well imagine how far $6 went for room and board at the Brown Palace Hotel in Denver, where we intermittently spent many weeks.

I hope I have not given the impression that after starting the geological work in the vicinity of the Sullivan Mine I departed to spend the remainder of the summer with the Colorado River Board. It is true that I made a number of trips in connection with the work of the Board, but most of the summer was spent on the job in British Columbia. In the fall, however, I did devote rather concentrated time to the Boulder Dam job and had to be away from some of my classes at the University of Wisconsin.

While I was in Denver late in the autumn, I had a most urgent telegram from Jim Growdon, Chief Hydraulic Engineer of the Aluminum Company of America, telling me that an emergency had developed in connection with work preliminary to the construction of the Calderwood Dam and my presence was urgently needed. I traveled at once to Calderwood, where I learned that in the course of excavation in preparation for the construction of the right abutment of the dam, a disastrous landslide had occurred, burying a large power shovel and very nearly catching the operators.

We went up to the damsite, and it made me almost ill when I viewed what had happened. I told Jim Growdon that he had not read my report. He said that he had, and I replied that if he had read it, he had ignored it. I had the report in my brief case and asked him to stop and read the last paragraph right there on the spot. This he did.

The paragraph warned that the soil and sliderock on the mountainside above the right abutment would slide if there was too much excavation. The cut required for the proposed gravity section dam should be kept to an absolute minimum, in order to be safe.

Growdon read this paragraph and said, "Well, W. J., you're in the clear - but now what can we do?"

Plans had originally called for a gravity section dam, which entails a minimum amount of preparatory excavation at the abutment. These plans had been changed, without my knowledge, to an arch dam, which involves an extensive stripping of bedrock at the abutments. It was this wide excavation which had invited the disastrous slide. I will not go through the details of how the matter was handled, but I am pleased to be able to say that I found a thoroughly satisfactory answer to the problem and that the dam was built and has stood safely for the past thirty years.

February 9, 1959

Dear Family,

In a previous letter, I told you in some detail about a lawsuit in Butte, Montana, between the Clark interests and the Anaconda Copper Company. I had most interesting experiences as an expert witness in two other lawsuits. These stories may not interest you, and I must confess that my principal reason for including them in these letters is the fun that I have in reviewing them. Practically all of my associates in these cases are dead, so I can only reminisce with myself! Writing these letters consequently is just a rather poor substitute for the "do you remember" sessions I might have had with my old colleagues.

In 1918 I had a visit from Mr. J. R. Bent, President of the Oglesby Coal Company, which operated a coal mine near Oglesby, Illinois. Mr. Bent explained that the Oglesby Coal Mine was operating at a depth of about 500 feet; above the coal mine, operating at a depth of about 100 feet, the Marquette Cement Company was working a limestone mine for the production of Portland cement. The Oglesby Coal Company had sold the limestone mining rights to the Marquette Cement Company. Later they regretted having made the deal, because Marquette was experiencing mining troubles in the limestone mine, and they attributed their problems to subsidence caused by the mining of the coal below. They had applied for a permanent injunction which would prevent the Oglesby Company from mining any more coal in the area beneath the limestone mine. This would involve litigation in the United States District Court in Illinois, and Mr. Bent asked me to make a study of the problem with the idea of serving as an expert witness if I approved of their contention that the coal mining had not caused the roof failures in the limestone mine. The case sounded interesting, and I agreed to the arrangements proposed by Mr. Bent. My very good friend and long-time associate at Madison, Dr. William O. Hotchkiss, Wisconsin State Geologist, was also retained by Mr. Bent.

This developed into an interesting lawsuit. Interest was increased by the fact that my close associate, Dr. C. K. Leith, was retained by the Marquette Cement Company as an expert witness on the other side of the case. Another geologist, whom Hotchkiss and I both knew well but who was a particularly close friend of Hotchkiss' - Dr. Buhler, State Geologist of Missouri - was also retained by the Marquette Cement Company; so here were four old friends and associates divided into two opposing teams in this contest.

The case was tried in Chicago before Judge Sanborn, of Madison, a most capable jurist, particularly in technical matters. The trial was very interesting, but long, and consequently expensive to the litigants. Although many incidents make good stories, I will try to hold my story-telling proclivities in check!

I was greatly disappointed with the manner in which Judge Sanborn handled and disposed of the case. He listened through many weeks of trial, in which we felt that it was irrefutably demonstrated that the mining of coal had not caused the roof failures in the limestone mine, and then found that the coal company was at fault. At the beginning of the trial, Oglesby had stipulated that the mining of the coal had caused the surface of the ground to be lowered by subsidence a distance of about 18 inches; they contended that this subsidence had been so even and so slow and gentle as not to damage surface structures or the limestone mine. But the decision of the court granted the injunction, not on the grounds that the subsidence had damaged the limestone mine, but on the theory that the owners of the surface of ground (this included the Marquette Cement Company mine) had the right of position and support; the coal mine company did not have the right to lower them 18 inches, even if it caused no damage.

To me it seemed most unfortunate that the judge did not arrive at this conclusion at the beginning of the trial and save the great expense of lengthy litigation. All of the facts on which the decision was based were available when the trial began, but legal procedure does not always appear to be sensible.

A second piece of litigation, which proved to be very interesting indeed, involved an iron mine in the Iron River district of Michigan. The owners of the mine had leased the property to an iron mining company and in the customary fashion received their remuneration in the form of royalties based on the number of tons mined. After the mine had been in operation for some time, the fee-owners suspected that the mine was being robbed of its easily mined ore and that a large amount of ore was irretrievably lost by these inefficient mining methods. As a consequence, they instigated a case in which they sued for recovery of royalty on the ore that had been lost by inefficient mining methods.

In this lawsuit I had as an associate a brilliant mining geologist by the name of Stephen Royce. Royce was the son of the famous Harvard Professor of Philosophy, Dr. Josiah Royce. He was located in the Crystal Falls district, and I had known him for years. Stevie, as we called him, was one of the best raconteurs that I had ever known. He knew innumerable stories and anecdotes of all types, and sessions with him were always delightful. He laughed at his own stories just as heartily as did his audience. It is interesting that in this lawsuit my good friend, Bill Hotchkiss, who had been with me in the Oglesby coal mine case, was an opponent, serving for the mining company that was charged with wasting ore.

I am again sorely tempted to tell you the humorous incidents and anecdotes that came out of this case, but I will strive faithfully to keep this to a reasonable minimum.

After many delays and a great deal of sampling, investigation, and technical study, the case finally came to trial in Marquette, Michigan. All of the witnesses were assembled at the Hotel Marquette, and the trial was to begin the following morning. We all marched up the hill to the Courthouse in the afternoon and listened to the final stages of the preceding case. After this case had been completed, the judge retired to his chambers, and the attorneys followed him into this sanctum sanctorum. For some strange reason - perhaps from an overdose of curiosity - I went up to the door of the judge's chambers and did a little eavesdropping.

It's a good thing I did. I heard Mr. Sherwin, the local Marquette attorney, plead with the judge for a further delay of the case. He said that his principal assistant, Mr. Bell, was convalescing from pneumonia and that his most important witness, Professor Leith from Madison, could not be present. On hearing this, I was shocked, astonished, flabbergasted! I knew the judge was an old friend and crony of Dr. Leith. A week or two previously Dr. Leith had come into my office and told me that he had just had a visit from Mr. Sherwin, the attorney from Marquette, who had tried to persuade him to agree to serve as an expert witness. Leith said that he had told Sherwin that he would have nothing to do with the case because he knew too much about it; and he had turned down, most positively, Sherwin's request.

After hearing this pitiful plea from Sherwin, I searched for the nearest telephone and found one in the sheriff's office. I called Dr. Leith on the long-distance telephone and found that he was away attending an appendicitis operation on his oldest son. But I left a message with his secretary, my good friend Arthur Demming, explaining that I had just heard Mr. Sherwin refer to Leith as his principal witness. I asked him to please have Leith wire me about this matter.

We returned to the hotel. Our attorney, Mr. McDonough, was very discouraged and low. All of us sat down together around a round table in the dining room. Before dinner was completed, someone came in and handed me a telegram from Dr. Leith which said, "Please advise judge that when Mr. Sherwin called on me, I refused to have any connection with the Homer Mine case. I have not been retained as a witness, and any statement Sherwin has made to the contrary is not correct. If this telegram is not sufficient, please advise me."

I handed this telegram to Attorney McDonough, who said, "My God, what does this mean?" When I told him about the telephone call, he arose and said, "Mead, you don't get any more dinner. Come with me."

We went to the writing room of the hotel, where the attorney wrote out in longhand an affidavit in which I stated the whole episode. We found a Notary Public to stamp this affidavit. McDonough, with his coat and hat on, waited while the judge finished his dinner at another table in the hotel, and then followed the judge up the hill to the Courthouse. When his Honor had established himself for a peaceful evening in his chambers, McDonough entered and presented him with the affidavit and attached telegram.

The judge immediately sent for the sheriff, who went out and found Mr. Sherwin in white tie and tails at a formal party. He brought him before the judge late in the evening, and McDonough said he listened to one of the most thorough legal denunciations in his experience. The judge told Mr. Sherwin that he had all of the material necessary for his disbarment, and he ordered the lawyer to appear at 9 o'clock the following morning, with or without witnesses or assisting attorneys, to open the trial of the Homer Mine. By this time, needless to say, I had acquired no popularity with the opposing attorney; and I had every reason to expect rough treatment from Mr. Sherwin when he got around to cross-examining me on the witness stand.

The trial was very interesting. It was the first appearance on the witness stand for Stevie Royce, and he handled the situation beautifully. I must tell you of just one incident. Royce had testified as to how, in his opinion, the mine should have been operated. In cross-examination Mr. Sherwin said, "Mr. Royce, you have testified as to the manner in which you think the mine should have been operated. Is it not possible that a mining engineer of your training and experience, studying a mine exactly like the Homer Mine, would recommend a method of mining quite different from the one you have described?"

This was obviously a very neat "trap" question. Royce could destroy his testimony by admitting the possibility of what the attorney had postulated, or he could place himself in a ridiculous position by claiming that his was the only correct opinion. I was greatly concerned with how he would handle this question and made a note of his reply. Royce swung his swivel chair nonchalantly from side to side and said, "Mr. Sherwin, I am here to testify about my observations and about my conclusions based on those observations. Obviously I cannot be expected to testify about the conclusions reached by a hypothetical engineer cogitating over a situation that never existed." Sherwin hesitated a moment and then stormed at Royce with the inconsequential question, "What do you mean, a situation that has never existed?" Royce smilingly reminded Sherwin that his own witnesses had testified that there never had been two ore bodies exactly alike.

Our engineers had testified that if the Homer Mine was operated in the manner described by their engineers, there would be a disastrous air blast due to the collapse of the roof of a stope. During a recess in the trial of the case, the Homer Mine emphatically testified for the plaintiffs. An air blast did occur and caused an astonishing amount of wreckage in the mine, though fortunately there was no loss of life. This was precisely what our engineers had predicted, and the case was settled out of court for the full amount claimed by the complainants.

April 8, 1959

Dear Family,

Please don't let the date on this letter confuse you. Read the following explanation carefully.

The previous letter brought the story of the Mead family up-to-date and I felt that the task was finished. I have just finished reading all of the letters. It is a record of some of the things that happened in the family but it certainly isn't literature! Too bad I'm not a better writer. But, frankly, I am surprised that I actually did finish the job. The letters had many narrow escapes from the incinerator.

I found one serious omission, a flaw that I am going to try to remedy with this letter. The letters have told you very little about the family life of the Mead family, especially during the time when the boys were growing from little boys to big boys and then to young men. I have told you about the arrival of each of the children and something of their high school, prep school, and college years. But there is a big gap between infancy and college. I can hear Warren or Judson or Jere saying, "But Dad, you didn't tell about the interesting things, when we were kids." So I am going to try to do just that and then stick this letter somewhere back in this series of letters.

The two older boys probably remember living in the apartment on Jefferson Street in Madison, with Nana and Grandfather Taylor in the apartment above. We owned a vacant lot diagonally across the street and here I cultivated a vegetable garden. Warren will remember when he and a small boy friend harvested all of my precious radishes and tried to sell them to the neighbors.

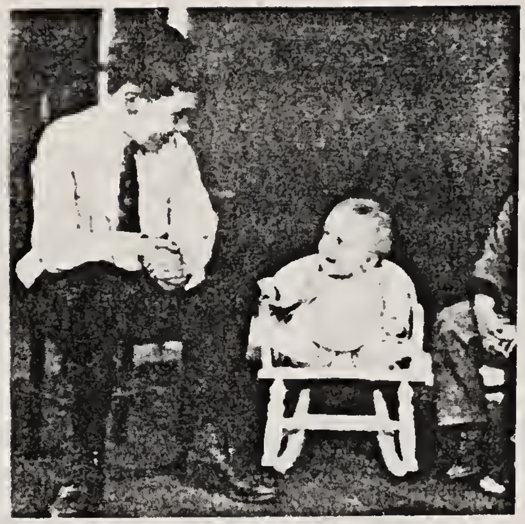
One day in May of 1918 I returned home after a week's absence and finding no one in the house at the moment, crossed the street to visit my garden. When I returned to the apartment the kitchen screen-door was locked and I was admitted by the maid, Agnes. Her face was covered with some type of skin eruptions and she looked terrible. We all sat down to lunch, prepared and served by Agnes. I had lost my appetite. After lunch Bertha drove me down to Science Hall. I asked her what she was going to do about Agnes. She said that Doctor Dean had seen Agnes and said the eruption was a consequence of the medication she had received at the time of her appendectomy which she had while I was away. I said that Agnes had smallpox, and Bertha was highly amused. I insisted that I was right and also worried. I told her to call Dr. Borden, the city health officer, as soon as she got home.

Later in the afternoon I had a tearful wail over the telephone from Bertha. The health officer had arrived promptly, agreed with my diagnosis, and Agnes had been taken to the Hospital for Contagious Cases. (In the old days, the Pest House.) So, we were all vaccinated, I worked until midnight washing every dish in the cupboards with a disinfecting solution and wiped all door knobs and other things Agnes might have touched. The health department sent men to fumigate the apartment! We had quite a time but no one contracted the disease, and Agnes made a good recovery.

Then Bertha wanted to know how I knew it was smallpox, or was it just another lucky guess? I explained that when I was in charge of a gang of men in an exploration camp in Canada, one of the men became very ill. The cook said it was smallpox and it looked like bad trouble. I read our camp "doctor book" and learned that the smallpox eruptions feel like a small shot beneath the skin while the eruptions due to measles are smooth. So I assured the camp that the sick man had measles, and that is what he had. Agnes appeared to have shot beneath the skin. I remember how I hated to feel for the shot on the face of the sick man.

I shall never forget an incident that occurred while we were living in the apartment when Judson, a very small boy in rompers, set his father back on his heels with a whale of a jolt. The kid taught me a real lesson. There had been a fatal accident in Madison when someone was electrocuted in a basement by grasping the brass socket of an electric light cord. Father Taylor said he would get porcelain sockets for the basement if I would install them. I undertook this task one Sunday morning, and Juddy watched every move. All of the lights were on drop-cords and these could be disconnected at the ceiling by a simple turn of the wrist. These fixtures, no longer in use, were called rosettes. I went to each light cord, detached it at the rosette, took it into the shop, removed the brass socket, attached the porcelain socket and then replaced the cord in its proper place. Juddie watched every move. When we got to the furnace room I asked Juddie to go upstairs and get a candle.

The Three Brothers;
Jeremiah in white rocking-chair
used by four generations.



I explained that there were other wires (to the bell transformers) coming out of the rosette and so I couldn't take it into the shop. When I detached the rosette I would be in the dark. But Judson said, "Daddy, you don't need a candle." I called him a little dumbbell and told him to scram and get the candle He still insisted that I didn't need a candle and I detached the rosette leaving us in the dark. Then I asked him what he woul do in the dark. He said he would use the electric light in the vegetable room, across the hall. I turned on the light in the vegetable room and showed him that it didn't help at all. He sweetly said, "But, Daddy, you can move it in here." Out of the mouths of babes! It had never occurred to me that I could do just that. Who ever heard of moving cords about from one rosette to another? This affair proved that Juddie was smart and his father very dumb.

This was not the first time Juddy had exhibited the sa variety of ingenuity. We were on one of our week-end visits t the old home in Plymouth. Juddy made frequent trips through the living room and onto the front porch. Each time he wishe to return I had to open the screen door for him, as it stuck i such a way that he couldn't open it from outside. Each time h wished to enter, our conversation was interrupted so I told hi to either stay in the house or on the porch, that I would not open the door for him again. He immediately went to the door and I warned him that he would have to stay on the porch as I would not open the door again. He stopped with the door partl open, bent over, and pulled one of a pair of rubbers into the door opening, which prevented the closing of the screen door. He then turned and grinned at me. My mother, who had watch the performance, remarked that the little fellow was smarter than his Dad. Judson is no longer a little fellow, but he is sti smarter than his Dad.

We moved into the new house on Adams Street in 1922; and until Warren "fell out of the nest" or "flew the coop" in 1931, all five of us were living together. That was a wonderf

Bertha, Warren, and Judson.

time. We had lots of good times together. There was a big garden in the back yard and we raised every variety of vegetable you can name. There were fruit trees and grapevines, even wild crabapple trees.

Christmas was always a wonderful time and a big job. Always a Christmas tree and it had to be decorated on Christmas eve after the kids had gone to bed. Father Taylor never failed to appear at just the right moment to help in this task, just as thrilled by Christmas as the children.

We had a work shop in the basement with a fair supply of tools that the boys could use. The two smaller boys tinkered with kites and various small projects. But not Warren. He usually had big ideas and decided to build a boat to use on Lake Wingra. If he built the boat in the shop, there would be no way to get it out. So the boat was built on the basement porch, with the help of one of his friends. They dragged it to the lake in some fashion and I believe it actually floated and carried them on the water.

Living next door to us was a wonderful neighbor, Miles Riley, an attorney. He and Mrs. Riley had three sons, Bill, John, and Miles, and a daughter, Betty. They were about the ages of our boys. Mr. Riley was an enthusiastic gardener and raised beautiful flowers. The oldest son Bill, a friend of Warren's, became an attorney. Bill met a tragic end in Lake Wingra. He was skating and carrying his small daughter on his shoulders when he skated onto thin ice and went through. The little girl was thrown forward onto the ice uninjured but Bill was drowned.

Two cousins of the Riley boys, from Milwaukee, Maryalice and Helen Riley, frequently visited the family of their uncle next door. Maryalice played the piano, and her sister the violin; they came to our house and had quite an orchestra, with Warren playing the clarinet. Many years later, Maryalice and Warren were married.

As Warren approached the age of twelve he developed an interest in being a Boy Scout. Scouting was new to Madison and there was no city organization. I found out what I could about Scouting and started a troop, to be sponsored by our little Episcopal Church, St. Andrew's, in Wingra Park. This troop was chartered as Troop Number One of Madison, and we were proud to be Number One. I served as Scout Master until we left Madison in 1934. We had the best troop in Madison and I learned many things, the most important of which was the importance of delegating authority. In the earlier days I ran the troop like a schoolmaster. I sat at the end of the table and presided at meetings and personally gave all the tests. I instructed the scouts in the things they had to learn. Then I got smart! I delegated one of the older boys to act as assistant scout master and preside at meetings. I appointed a committee to give the tests. I attended all meetings, but sat back in an advisory capacity. The scouts ran the troop and they did a wonderful job. Boys remained as active members of the troop until they were students in the University. Warren, Judson and Jere were all members of the troop eventually. Troop One has a very distinguished list of alumni.

Perhaps I started to be something resembling a scout master right in my own home, before Troop One was organized. Any father with three young sons has a troop of his own. In some way we got started on what we called Sunday afternoon stunts. These were problems that the boys had to work or simple experiments that they had to explain. I recall one Sunday afternoon when I had been working at the office, Bertha called to me when I entered the house to say that I better have a stunt ready for the boys as they had been waiting for it. I had nothing in mind but took them all down in the shop to see what I could improvise. We found an eighteen-inch piece of iron pipe, threaded at one end, which the furnace repair men had left. Also a cap that could be screwed onto the threaded end, some furnace cement and a piece of flexible copper tubing I happened to have. I split some long pencil-like sticks of dry pine and filled the pipe with them, after closing one end of the pipe with the cap. Then we cemented an end of the copper tubing into the other end of the pipe, with the furnace cement. I pounded the outer end of the copper tube nearly flat. There of course was a running fire of questions, "How is it going to work?" "What will it do, Daddy?" "Is there going to be a fuse?" We carried the pipe full of sticks upstairs where I placed it in the cannel coal fire in the fireplace, leaving the copper tube sticking out at one side. We sat and watched it and waited. After a time smoke began to come out of the copper tube, gently at first and then in quite a stream. Finally one of the boys asked if the smoke would burn and I suggested he try it with a match. Hooray, it did burn! There was a fine torch-like flame that continued for some time. The pipe got red hot and the flame finally went out. There was a steady flow of speculation about what was happening to the wood. What was left in the pipe? One said ashes, another thought the wood would change to charcoal. We pulled the pipe out of the fire and gave it time to cool while we had supper.

After supper we returned to the shop and cut off the end of the pipe with a hacksaw. Out came beautiful straight pencils of black charcoal, which were placed in a shoe box and taken upstairs to show Mother. Then more talk till bedtime, about how wood burns.

Next Sunday it was something else. It kept me busy thinking up stunts, but it developed a great desire to know why, in the minds of the boys. They weren't satisfied to know what happened, they had to know why it happened, and that was healthy.

At one time, probably about 1924, I had a used, black Franklin coupe to serve as a second car. I used it principally to drive to and from the University so that Bertha would not be left without a car. During a January thaw, a large mass of snow fell from the roof of Science Hall, landed on the hood of the little car and mashed it down against the engine. No other damage and no mars or scratches on the finish. This did not interfere with driving the car so I drove home to lunch. Bertha was away but the three boys were there. When I arrived at the house, Warren and Judson were home. Jere was playing with Miles Riley, next door and hadn't arrived.

I told Jud and Warren to go out and look at my car and say nothing. I offered a reward of twenty-five cents to the boy who could offer the best explanation of what had happened to the car. They went outside and studied the problem with care. Then Jere came home and wanted to know what was cooking. I explained the problem to him and he made a thorough inspection.

When we sat down at table for lunch, I asked for their conclusions, and Jere piped up with the statement that he knew what had happened to the car, but if he told me the other boys might say they had the same answer. So, I said I would take each boy out on the porch to hear about his theory, beginning with Warren. Warren said he had no explanation at all, except he was sure I hadn't been in a collision as the fenders and bumper were not damaged. Judson said that I must have driven up behind a truck loaded with long poles which were bobbing up and down, and one of the poles slapped down on the hood of the car.

Then I called the youngest, Jere, who had already said he knew what had happened. I first found that he had not been out of the Riley basement and couldn't have heard about it over the telephone. He said that he had looked the car over very carefully, that there were no scratches and no damage to anything but the hood. He reasoned that it must have been something soft that came down from above. That the only soft thing was snow and that it must have fallen from a roof as there couldn't be enough snow in a tree. That it must have been a very high roof because the snow wouldn't hit hard enough just sliding off a house. That kid hadn't missed a single detail. It was good observation and flawless analysis. He got a reward of fifty cents instead of a quarter.

One day a large yellow cat came to live with us, so now we had a cat! The small boys were delighted and Bertha always liked cats. It was quite apparent that the cat was soon to have kittens and this made her the more acceptable as it would be a wonderful way for the boys to learn a bit of fundamental biology - better than the usual bees and flowers.

The cat had paid little attention to me and I could hardly claim a speaking acquaintance with her, in fact I hadn't known that she could talk, but talk she did! I arrived home early one afternoon and found the house deserted, except for pussy. I sat down in a chair in the living room and she sat on the floor in front of me and clearly told me in loud meows (I never learned to spell cat talk) that she was about to have her kittens. I understood at once and picked up the conversation by asking her if she wanted a basket and a quiet place. She said she did. That cat actually answered me every time I spoke. I told her to follow me and went to the attic with kitty at my heels. I found a clean bushel basket and an old cushion and asked her if that would do. She hopped in and thanked me with sounds of contentment. I left her and returned to the living room.

I forgot to tell Bertha and the boys about the incident at dinner time, but after everyone had retired I remembered about it and told Bertha. She laughed and laughed and said, "So now you are midwife to a cat! I can't wait to tell the boys." She went to sleep laughing and awakened me in the morning by calling for the boys to come in. She told them about it and sent them scampering to the attic to disprove their lying father! They were gone quite a while and then came back, quietly excited. The cat was there in the basket and she had two kittens!

One afternoon the big yellow cat was caught in the act of stealing food from a dish on the counter in the kitchen. This was one thing that Bertha would not stand for, a sneaky, thieving cat! She said, "You pretend to know her language. Talk to her and tell her it's bad, or do something to train her." A few days later I had an idea. A way to communicate with the cat and perhaps convince her that crime doesn't pay. I put some attractive food in an aluminum sauce-pan and placed this on a large metal cookie-flat with a small disc of wax-paper under the sauce-pan. I then rigged a circuit from the 110 volt house current, so that it would pass through a 100 watt lamp with one wire to the pan and the other to the cookie-flat. I told the maid, ironing in the basement, to touch nothing. The cat must have stood on the cookie-flat, which I had moistened with a little salty water, and reached into the dish for the food. She closed the circuit and got a most educational surprise. The kitchen rug was piled against the refrigerator, the rug in the hall against the side of the basement doorway, and the maid in the laundry said the cat had come down the stairs in a single leap and disappeared into the store room. She didn't show up until the next morning and after that you couldn't even place her on a table or bench. She was a reformed cat.

Not long after we moved into the new home on Adams Street we acquired Patsy. It seems that all small boys must have a dog. I have never subscribed to this theory, but it is difficult to oppose three boys and their mother, so in some way we came by Patsy, a small sized, wire-haired fox terrier, with a shrill, yipping bark. One night in the late winter or early spring - I remember there was snow on the ground, but the air was warm - I had all of the family tucked snugly away for the night and crawled into bed myself. The boys and their mother all had colds and I was a nurse with several hospital rooms to attend to. I had just assured myself that all of my patients were at last asleep when I heard that idiot dog start his senseless barking. I had forgotten to lock him in the basement where he belonged.

He was doing his midnight serenade at the front of the house so I stealthily crept downstairs in my slippers, opened the front door and tried to call him in but he wouldn't come and it was necessary to go after him. I reached into the coat closet for something to cover my pajamas and got my fur-lined overcoat. I stepped out into the enclosed entrance and then out to the sidewalk where I managed to collar the culprit. I dragged or carried him by the collar back to the door, but found that some unkind movement of air from the inside had closed and locked the door! I shut Patsy inside the front porch. I had to get back in the house without disturbing any of my patients. That should be easy as we never remembered to lock everything.

I had no luck at the kitchen door. I could get into the basement porch but the door into the basement was locked. I found that I could open one basement window, the one back of the huge wooden-roller mangle, used for ironing. I managed to squeeze through the window and over the mangle and I was in the basement! At the top of the basement stairs someone had thoughtfully turned the bolt.

There was a box of extra keys in the shop and I thought one might fit the kitchen door. The key had been left in the lock but I managed to turn it and drop it on the inside with a little glue on the end of a small round stick. I found a key that would unlock the lock, but someone had turned the bolt as well as the lock!

This all took time and I was becoming quite unhappy, a little worried about my patients and hot as hades in the fur coat.

There was a short step-ladder in the basement and I knew there was one window in the study that could not be locked. By standing on the top of the ladder I managed to push the window part way open with a stick and could then hook one hand over the sill and push the window with the other. This worked fine but at this crucial point the ladder tipped sideways and left me dangling. In that damned coat I managed the impossible contortionist feat of dragging myself through the window over the end of the couch and the wastebasket to lie exhausted, and profanely protesting about dogs. I got Patsy and tossed him into the basement, hung up the coat, got a dry suit of pajamas and made the rounds of my hospital. They were all sleeping sweetly and hadn't missed me at all!

Parents of small boys usually have at least one runaway-boy story. When Jeremiah was a very small boy, he failed to appear at lunch time one winter day. He had been playing in the snow with a companion of the same age, Miles Riley who lived next door. When Bertha and Mrs. Riley could not find the boys anywhere in the neighborhood, she telephoned for me at the University. I told her to tell the police and then started for home. We searched the neighborhood thoroughly in widening circles without finding them. I then thought of the farmer and the stray mule. He just thought "Where would I go if I was a mule, and I went there and he was there." I remembered that Jere had been quite excited over a scooter he had seen in the window of a hardware store on University Avenue, a couple of miles away. The scooter had a metal box beneath, to cover the gears. Jere thought it was a motor, so he wanted a scooter with a motor.

On this long chance we drove to the hardware store and picked up a clue. The proprietor or salesman said two small boys had been in and asked for a scooter with a motor and had sadly departed when he showed them that there was no motor. We drove back along University Avenue and spotted the pair trudging homeward. The mule theory worked!

The poor, tired kid was cleaned up and fed and then Dad had to make good on the firm promise of a spanking for a runaway. Mother pleaded almost tearfully but the boy got spanked. He protested loudly, but I heard him tell his brother, Judson, that it was just nothing.

We lived a very happy life in the house on Adams Street. The boys grew up much too fast and the summer vacation time began to be a problem. Warren was five years older than Judson, too old to be a playmate of his younger brothers and their friends. I was away every summer from May until October, with only an occasional brief visit at home. We had long discussed the possibility of a summer cottage on one of the lakes and finally, about 1928, we found a place on the far side of Mendota that could be purchased. It was a small two-story house or cottage, in which a family had been living throughout the year. It was in rather bad condition and would require revamping. To Bertha, the attractive feature was a wide porch that extended on three sides. The purchase of the lake cottage proved to be one of the finest things we ever did. It was a do-it-yourself summer camp for the boys, and Bertha enjoyed it fully as much as they did.

We screened the porch and put up wind-breaker curtains that could be rolled down and up, built a very good kitchen, lined the main room with pine boards which gave it a log-cabin effect and built a boat house and a pier. I don't believe I spent more than a dozen nights at the cottage during the twelve or more years we owned it. But I must tell you what happened soon after we bought the place and before we modernized it. This story was actually published in one of the Madison papers in a very much garbled form, so I'll tell it here, just to put the record straight.

It was fun to stay at the cottage a few days, even if it was not quite ready. We moved cots onto the porch for Bertha and the boys, and I had a cot to sleep on in the corner of the living room. After we were settled down for the night and before I had gone to sleep, I heard some kind of animal

Young Warren
with his father and
grandfather at Plymouth.

snooping around on the bare floor. My flashlight showed a huge rat that disappeared into the kitchen. I got up and found where he had a hole in the floor in the corner of a small kitchen closet. Next day Bertha was horrified. I assured her that we would get rid of the rat and rat-proof the cottage, but that first I was going to catch this one. So the rat and I began an interesting contest of wits.

The rat could enter the living room through a hole in the floor at the corner of the fireplace or via the kitchen closet. My problem appeared to be simple. The door from the living room into the kitchen was a Dutch door made in two sections which could be opened and closed separately. When the upper half was closed, it moved the lower section with it, but could be opened separately if the lower part was closed. I converted the kitchen into a rat-trap! I closed all openings from which the animal could escape from the kitchen. I had heard him stealing food from the saucer placed on the floor for the kitten so I knew he would go to the kitchen for food. I attached a fishpole to the door, so that I could close it without moving from my bed and left the door open about half way, so that a shove on the pole would close it.

That night I went to bed and waited for the rat. He always grunted audibly as he galloped about the room. I heard him go to the kitchen door, sniff and grunt, but he didn't enter the kitchen. The following night I left the door wide open and Mr. Rat went into the kitchen. He wouldn't go in unless the door was wide open! So I got a large snap-trap and set it in the closet with tempting bait. As soon as things were quiet I heard the trap snap with a loud noise and went out to get the rat. An empty trap, but no rat. He ate the bait. The following night I set the trap as before, but screwed it to the floor and he wouldn't touch it. He stole things from the refuse basket on the porch. I got a steel trap, the kind used by trappers of muskrats, baited it with the head of a fish, placed it in the bottom of a bushel basket, and covered everything but

Warren and Judson
on Trixie.
(turn back to page 30)

the bait with wood shavings. That night I heard the smart old fellow go out on the porch, scramble into the basket and set off the trap. He got the bait but escaped the trap. The next night I repeated the performance but wired the trap to the bottom of the basket. I heard him go onto the porch and scramble into the basket, but there was no other sound. In the morning the wood shavings were disturbed but the bait was untouched and the trap unsprung! Here was the kind of smart old timer I had often heard stories about.

I had told my friends at the University Club about the battle of wits I had been waging with the rat, and from Monday to Friday I had many suggestions. When we went to the cottage on Friday for the weekend, I noticed that the folding fireplace screen had fallen down and then I saw that there was a huge dead rat between the sections of the screen. It was the old boy himself! Scarred and gray, with only a stub of a tail. The leaf of the screen couldn't possibly have held him or hurt him. I am sure he died of heart failure or of shock. He thought, here is one I missed, this is it, and just died. I didn't win the contest - he licked himself. I believe he was the last rat we ever saw around the cottage.

The boys of course wanted to sail a boat. First it was a home-made rig on the row boat called "the flying bathtub." They had learned to be good swimmers, so it seemed safe for them to fool around with the boat. Later they got a class C boat. This was a standard type of boat used on the lakes for sailboat racing. A beautiful thing, shallow and flat with two boards and two rudders. The boat was sailed practically on edge, and one board and one rudder were out of the water in a brisk wind. They joined the Mendota Yacht Club and had wonderful times in the weekly races.

Later they graduated to a larger craft, a class A boat which was larger in every way and had a bowsprit and jib, as well as a mainsail. These boats were astonishingly fast and

Four generations at Plymouth;
Warren J., Mother Mead,
Warren and Nana Rob.

called for a high order of skill on the part of the skipper and crew. The boys carried off their share of trophies, and race days were exciting days for Bertha. She didn't sail but was greatly interested, and entertained many of the boys' sailor-friends. This fun in the summer continued after we moved to Boston and until the boys finished prep school.

While the boys were growing up, we had many trips to the old home in Plymouth. We got our first automobile, a Hudson Super-six, in 1916. Prior to that year we made our trips to Plymouth on the train, so Warren was the only child to make the Plymouth trip by rail.

It was one hundred miles from our house in Madison to the home in Plymouth. In 1916 this was an eventful trip. No hard-surfaced roads, dust in dry weather and mud when it rained. On one trip we had to hire a team of horses to pull us out of a mud-hole. It was a long trip that used the whole day, but it was a lot of fun and the children loved it. We went by way of Fond du Lac and always saw Lake Winnebago, and the boys learned the names of all the little towns. As the years passed, both the roads and the automobiles improved, and in the 1930's we could easily make the trip either way in about three hours. But I will never forget the trip to Jessie's wedding late in the fall of 1916. The roads were muddy and deeply rutted. The mud froze solid during the trip, and the frozen ruts destroyed all four tires by ripping the sides of the tires to shreds. We didn't have a flat tire, but we shipped the car back to Madison over the railroad.

The trips were usually made in the early summer before I left for summer field work or in the autumn after I returned from the summer work. It was wonderful to visit Plymouth. There was the old pony, Trixie, to play with and ride. Father and Mother and Nana Rob, Uncle Charlie Eastman and Aunt Amy and Uncle Will and Aunt Mary Robertson, all within the same neighborhood. I, of course, made the rounds up and down

Nana Rob and Warren.

the main street to chat with the many old friends. In the evening we all went to the movie theatre. Father loved to go to the movies. I remember going with him when movies first appeared in Plymouth. The proprietor of the theatre had a little arched opening in the wall at one side of the screen. During the showing of the film he stood within this opening, behind a lectern, and read the titles aloud to the audience, adding a few comments of his own. Father got a big kick out of this part of the entertainment, which was finally discontinued when the commentator made the whole town laugh for days by a bit of faulty pronunciation.

I had a lot of pleasure in taking the family around the county to the places where I had taught school in Johnsonville and Hingham. It was a great time to take pictures and we have hundreds of prints of pictures of the old home and the family.

On some of these trips to Plymouth, Arlisle would manage to drive over from Berlin - about sixty miles away - with some of her children, and we had something of a reunion. Dr. Wiesender could rarely spare the time for a trip to Plymouth.

I hope the children remember their great-grandmother, Nana Rob. I think she enjoyed our visits more than anyone else. She loved to take a great-grandchild up to her room for a visit and always had a supply of little white peppermint candies. Bless her heart, she was wonderful.

There was always something "out of whack" for me to fix, the pump or the wind-mill or a lock or a hinge. Father couldn't fix anything, but Mother was a rather wonderful mechanic. She had her own tools in the woodshed and could use them. One of the last times I visited Mother in her home in Plymouth, when she must have been nearly eighty, I found her at the kitchen table with her pliers, screwdriver, and soldering iron, replacing the heating unit in her electric iron; and she scorned my offer of assistance.

Father bought Mother a little Ford coupe about 1920 and she drove it until she was over eighty years old. Father never attempted to drive, but he loved to ride with Mother.

February 15, 1959

Dear Family,

I am beginning to think that when I started this series of letters, I "bit off more than I could chew." Life has been long and busy, and so many things have happened I wonder if I am ever going to finish the job. I am sure I write too much, but it is difficult to know what to omit.

In 1929 I was called on an interesting assignment for ALCOA. The company was at last ready to build the Nantahala Dam - their first rock-fill dam, an idea Jim Growdon and I had dreamed up. The development involved a tunnel about five miles long to carry the water from the dam to the powerhouse. This tunnel was to pass under rugged, mountainous country. The question that Chief Hydraulic Engineer Jim Growdon put to me was a dandy: "Can we build an unlined tunnel and have no leakage?" He explained that the cost of a lined tunnel was prohibitive, but they could not afford to lose any water by leakage.

That was a $64,000 question for sure. (I should explain that until recently a popular TV program paid as much as $64,000 for the answer to a question, and this expression has become current slang.) I didn't know the answer or how to tackle the problem, but I finally arrived at a rather simple solution. The tunnel was driven unlined, has been in operation for years, and is "bottle-tight."

The job required first of all a traverse of the tunnel line, and that was really tough going. I found the rock was all of a kind that would stand up in the tunnel without the support of a lining. To prevent leakage, I located the line of the tunnel so that at all points the ground water table above the tunnel would never be lower than the elevation of the water in the reservoir behind the dam. If any water leaked, it would leak into the tunnel! Growdon thought this was a smart answer to his question and accepted it.

The other assignment for ALCOA was the Strutton Shoals damsite. Jim Growdon and I did this together. The dam was finally built, many years after our examination of the site, and I believe it is the most recent one constructed by ALCOA in the southern Appalachian region.

Most of the summer of 1929 was spent in British Columbia, much of it at the Sullivan Mine. Andy Anderson and Bill Rawles came to Kimberley for the second summer, and we finished the job of mapping the Sullivan Mine area.

During the school year 1929 - 1930, things were about as usual. Leith was away much of the time, and the Department was on my shoulders. On June 11, 1930, I received the following letter from Dean Sellery, and I quote:

> Dear Professor Mead:
>
> I have the honor to appoint you Chairman of the Department of Geology for the year 1930 - 1931. It gives me great satisfaction to place the responsibility of Chairman in your hands.
>
> With best wishes, I am,
>
> Yours very truly,
> G. C. Sellery, Dean

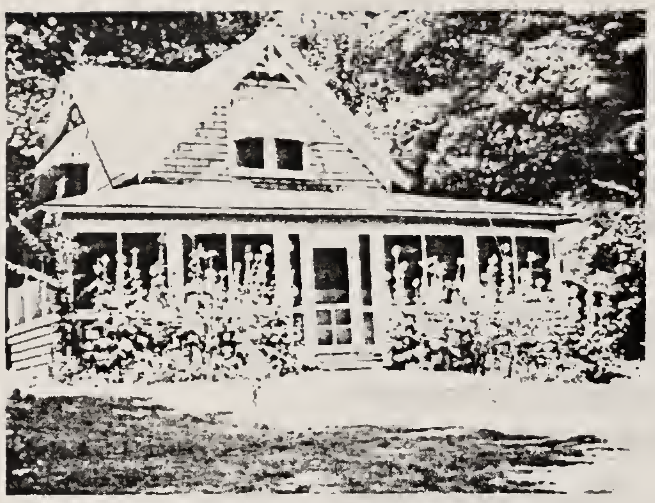
This was a surprise to me. I showed the letter to Arthur Demming, Leith's personal secretary, who said he knew nothing about it. I went into Leith's office and handed the letter to him, asking if he and Sellery had been cooking up a surprise for me. Leith read the letter, tossed it down and disclaimed any knowledge of it.

"Apparently I am out," he said. "Well, Mead, perhaps it is a good idea. You have really been running this Department for some time."

I told Leith that to call me chairman would not deceive me, him, or anyone else. Leith didn't argue my point and was reaching for the telephone as I left the office.

I went to the University Club for lunch and found Dean Sellery in his usual chair with newspaper and pipe. He lowered the paper, removed the pipe, smiled, and said, "Well Warren, it didn't work, did it!" I asked him if he really thought it would, and the answer was, "It was at least worth trying." That was a rather important forenoon. Had I, in fact, been advanced to chairmanship of the Department, I would not have left Madison for a position at M.I.T. four years later.

I was really hoping to have an invitation to go elsewhere, as it was apparent to me that the Department's Crown Prince had already arrived in the person of Andrew Leith and that Professor Leith planned to continue as chairman until his son Andy could take over.



The Cottage
on Lake Mendota.

The year 1930 was to be unusually busy and eventful. I had a new Franklin car, a small one called a coupe, and planned to drive to Kimberley taking son Judson with me. We left Madison as soon as school was finished, early in June, and had a wonderful time. Part of our trip retraced the drive we had made to California five years earlier.

We stopped two nights and a day in Butte, Montana. I had spent many weeks there and had many friends and acquaintances. Jud went with me to Kilvanic's Smoke Shop to get a box of my favorite cigars. This was a typical western "joint," with a tobacco store in the front part and a gambling room with card tables, and so forth in the rear. An astonishing display of "punch boards," with the prizes to be won, was distributed in show cases and in the front window. I gave Jud a quarter and told him to see if he could win something important. Kilvanic was looking over my shoulder as Jud asked, "Dad, is it alright if I keep the quarter?"

I assured him that it was his to use as he pleased, and he went to look out the window. Kilvanic solemnly shook his head and said, "Where the hell would I be if the grown men had that much sense?" A good question.

We finally arrived in Kimberley. (Jud was much impressed with the formality of crossing the border.) He spent two weeks with me in Kimberley, where I had a completely furnished small house and did all the cooking, which he seemed to enjoy. He spent much time with me in the field and in the mine. When the visit was over, we drove to Seattle and I put him aboard the Milwaukee Road train for Minneapolis and home. He left a very lonely Dad.

Bertha had been left in Madison with Jere, as Warren, after completing his year as a freshman in engineering at the University, had departed for a job with ALCOA in the Province of Quebec. Jim Growdon, with whom I had worked on many damsite problems, had a son John, about Warren's age, who was going to Quebec as an assistant in a surveying party. Jim

Bertha with Jud and Jere at Cottage.

suggested that Warren take a job with him. He did so and had a very successful summer as an apprentice surveyor. He returned to the University in the fall after visiting friends in New York and Philadelphia.

During my absence Bertha completed a deal which we had long discussed: the purchase of a lakeside cottage on Lake Mendota. This had been a family dream for years, and at last an acceptable property on the far side of the lake was available. The purchase was largely financed by the money Bertha had received when she sold her music class just previous to our marriage, so this was always known as her cottage. It was the center of activity for the family during many of the following summers and was one of the finest things that could have happened for both the boys and their mother. Unfortunately I was an infrequent visitor, as I could spend little time in Madison. But here the boys learned to swim, enjoy fishing, and later become expert navigators of the fast, small sailing craft typical of the inland lakes.

I realize now what an important part Bertha played in bringing up the boys. She taught them to swim and to drive the car. Encouraged them in the art of sailing, where they learned good sportsmanship. Entertained their friends and raised them as happy, healthy boys. I was away on geological field work from spring to fall every summer, with a few very brief visits at the cottage. Bertha did a wonderful job for the boys during the most important years of their growing-up period.

A glance at my file of reports shows that I must have had a busy summer and done a lot of traveling after Jud left Kimberley. There are reports on the Nantahala damsite, the Fontana damsite, and the Tuckertown damsite, all for ALCOA. There is also a report on the structural geology of the Hollinger Mine, which activity I should explain briefly. Professor L. C. Graton of Harvard had been pleased to have an opportunity to visit the Sullivan Mine at my invitation. (It was not easy for strangers to gain entrance to the mine.) He had been

The Arcturus I,
Lake Mendota;
Jere rides the board.

serving as a consulting geologist at the Hollinger Mine (one of Canada's big gold producers) for several years. He asked me to visit the Hollinger Mine as a consultant to investigate their problems in structural geology. I spent two days at the mine, found it extremely interesting, and wrote a report. I later heard from the chief geologist of the company that my structural suggestions had turned up some important gold ore.

Late in the summer Bertha came to Kimberley to visit me for a couple of weeks, and I met her in Spokane with the car. I had expected a vacation from kitchen work, but she fooled me completely. As a guest she refused to enter the kitchen, and I had to continue as chief cook and bottle washer. She even invited guests to dine with us!

We drove back to Madison in September and found that Warren had arrived ahead of us. My mother had been in Madison during Bertha's absence. I drove her back to Plymouth, and we talked every mile of the way.

There is little I can say about the 1930 - 1931 school year at the University. It was undoubtedly a busy time, as usual, with a full teaching schedule. In the spring of 1931 I again went to British Columbia. Bert Jure and I left almost immediately on an interesting trip to the Big Missouri Gold Mine, a property of the Consolidated Company located in the Salmon River district of British Columbia. This is where the Alaskan "panhandle" meets Canada, and the Big Missouri was just east of the panhandle. The trip entailed an enjoyable ride on one of the Canadian Pacific "Princess" ships and a rough trip through beautiful country into the area back of the Salmon River glacier. Much snow still lay on the ground when we arrived, early in July. It was new country to me and immensely interesting. Bert and I had occasion to return to the Big Missouri several times during the following years.

In 1932 I received an important letter from Max Mason. He said he had lunched with President Karl Compton of the

The Arcturus II,
Lake Mendota.

Massachusetts Institute of Technology, who had told him that the Head of the Geology Department, Dr. Waldemar Lindgren, was about to retire and that M.I.T. would be looking for his successor. Max said he had made no suggestions but was writing me to ask if I would consider leaving Wisconsin. I replied that I would be happy to consider any opportunity elsewhere, as I saw little future for me at Madison, but I asked him not to tell Leith about any opportunities that might be pointed my way. This request was prompted by my knowledge that the headship of the Department of Geology at the Missouri School of Mines and the Chairmanship of the Geology Department at the University of Minnesota had both started my way and had been diverted by Leith.

At this time the University was going through a troubled period under the administration of Glenn Frank. Frank had brought Professor Alexander Mikeljohn from the East and they had cooked up a wild educational concoction known as the Experimental College. This was one huge headache for most of the faculty. Frank published a book called Thunder and Dawn. Our local sage, Dean Slichter of the Graduate School, reviewed the book in one sentence: "Lots of noise but very little light." Fortunately neither Mikeljohn nor the Experimental College were permanent features.

One day I expressed my opinion of the mess very frankly to President Frank. I really "told him off" and assumed that I had done myself no good. But later I had a Sunday morning telephone call from President Frank, asking me to come to his home for a talk. I told Bertha, "Here comes the axe," and went to call on the President. To my great surprise his purpose was to ask me to be Dean of the College of Engineering.

I was flabbergasted. After a long talk, I told him I would like time to study the question at length, and we both agreed to keep the matter secret. It was a flattering offer, but I was happy as a teacher of geology and as an active field geologist. I was not sure that I wished to become an adminis-

The "Fairchild";
It took us to Great Bear Lake
and Coronation Gulf.

trator. To paraphrase an oft-used expression, perhaps I had been a professor so long that I was too smart to accept a deanship.

The summer of 1932 brought high adventure, and that is what I really mean: high altitude and high latitude. The Consolidated Company was interested in exploring for radium ore in the Great Bear Lake area. They had established a camp on Glacier Bay on Great Bear Lake the previous year and asked that Bert Jure and myself make an examination of their claims and have a general look at the area. We traveled by rail to a place called Waterways, where the road crosses the Athabasca River. Here in a log-cabin hotel we waited through a couple of days of rain and fog for the plane that was to fly down from Great Bear Lake and pick us up. At last it arrived, the pilot and mechanic looking like a couple of lumberjacks. Bill Jewett was the pilot and a very good one. Bishop, the mechanic, was a good fellow, albeit chronically sleepy. To our relief they decided not to start back that day, so we had a brief reprieve. We were both nervous and afraid of the trip, though we didn't say so at the time.

The plane was a single-engine Fairchild made of wood and canvas. Not one of these sleek aluminum jobs - just wood and cloth and wire cables. No seats to sit on, so on the trip up I sat on a microscope case, and Bert perched on a box of dynamite. The plane was really a freight car, ferrying provisions and supplies from Edmonton to the Great Bear Lake Camp throughout the summer. It was a pontoon plane, as the only landing fields were the rivers, lakes and ponds. The company owned and maintained its own fleet of planes. The pilots were all mining engineers. They had flown this north country for years without an accident.

Neither Bert nor I had ever been in the air! (After our return we mutually confessed that neither had expected to live to return.) But we had no choice, and so we took off the next morning in a drizzle, under a low gray ceiling.

We had our first "hair-raiser" less than an hour after take-off. We had been following the meanders of the river, and Jewett finally decided to cut across one big bend in the river. Low ceiling forced low flying and made visibility bad. I remember watching the brush and forest below and remarking to myself that it would be a long walk back if one could walk. It didn't seem possible that the engine could keep up its noisy, frantic struggle to keep the plane in the air. At about this point in my worried thoughts the engine did stop! I assure you there is no silence more impressive than a dead airplane engine. Jewett put the plane into a dive to keep the propeller turning and monkeyed frantically with things in front. I figured he would "pancake" the plane into the shrubbery, as I was sure we would crash. But just as he lifted a wing to avoid a tall tree, the engine coughed and resumed its roar and we climbed closer to the clouds. Jewett turned around, shook his head, and explained that in his concern about finding the river again he had drained a wing-tank and neglected to open the other feed pipe. This was usual procedure when the plane had plenty of altitude, but it was no good in the tree tops.

Now he had to find the Athabasca - and there wasn't even a compass to help, and no sun to indicate direction. Finally Bishop pointed and cried that he had seen the river in a direction at right angles to our course, so Jewett turned the plane and found the river. From then on he followed all the curves. I wasn't at all sure I liked flying!

We landed at noon at a post of the Hudson's Bay Company and enjoyed a good meal. Bert picked up a radio-telegram which said Mr. Archibald wanted us to examine a property on Coppermine River, which information didn't mean anything to Bert and myself at the time, and Jewett just grinned.

After lunch we took off and continued northward. A large black area of cloud appeared ahead. The pilot attempted to avoid it by detouring to the left, but the clouds grew too rapidly, and we were presently flying almost blind. We finally landed on the Peace River in a heavy rain and just sat there and waited. The clouds lifted enough to disclose an old cabin on the far side of the river, and we planned to make use of it if the skies did not clear. However, our luck was still good. The skies cleared and the sun came out, and we took off once more. At supper-time we landed at a Hudson's Bay post at the north tip of Great Slave Lake. Here we had dinner with the factor and spent the night. I cannot say that I did much sleeping, because it was "Treaty Day": the Indians from the surrounding country had come in for their annual dollar from the King and were encamped around the post. There were many Indians and even yet more dogs, which howled and barked all night. I got up early the next morning and took a lot of interesting pictures of the Indian families.

After breakfast we took off on a beautiful morning for Great Bear Lake and flew high above the feathery clouds. The pilot gave the controls little attention while he wrote up his log of the trip. We landed at Glacier Bay, and after supper Jewett got into radio communication with headquarters at Trail. This was an astonishing performance. In the office was a small Fairbanks-Morse combination gas engine and generator. This Bill started with a crank; while it noisily provided the current, he clicked away in code with a telegraph instrument, after which he stopped the engine by pulling a switch-cord and listened to the reply, also in code. Then he jumped to the engine, cranked it, and resumed his part of the conversation. After an hour or more of this performance, he finally came up with the message which instructed us to proceed to a copper exploration on Copper Mine River, far to the north. Early the following morning we took off and laid our course in the direction of the North Pole. Bill said that in order to get to the exploration we must land on Mystic Lake and that judging from the ice still on the lakes, we would find it closed. So we flew directly to Coronation Gulf on the Arctic Ocean and landed there on a strip of open water near the shore. We were greeted by an interesting group of Eskimos, and Indians, and mosquitoes! This was our first contact with the black fly and mosquito pest of the north country. Again we found the Hudson Bay factor and had lunch with him and secured much information. We also filled the plane with gasoline, a supply of which had been brought in for the company by boat.

On the return trip we flew over Mystic Lake and were greatly surprised to find that it was free of ice, so Bill decided to land. However, the lake was very small for a landing and particularly difficult for take-off because the short run which it provided could not lift more than a minimum load. We consequently landed some distance away at Dismal Lake (very appropriately named.) Here we located some empty gasoline drums on the shore and with much labor pumped out most of the fuel we had loaded at Coronation Gulf, in order to lighten the plane. We also left behind us the mechanic (Bishop) and most of the tools. We then took off again successfully and made a beautiful landing on tiny Mystic Lake.

The small camp of the exploration party was nearby. We were their first visitors since the previous summer, and they were avid for news, especially since their radio was not functioning.

The examination of the property required only a short time, and we returned to the little lake for the take-off. Bill started with the tail of the plane in the reeds at one end of the lake and raised the plane just as it appeared to reach the shrubs at the opposite end. He explained that it was a simple thing to do: you simply watched the water, and when you saw the weeds coming through the water, you lifted her!

Again we landed at Dismal Lake and found Bishop busy fighting mosquitoes. We laboriously pumped the fuel back into the tank of the plane, during which process the chamois-skin filter clogged and the wings were literally drenched with gasoline. At long last we had everything loaded back into the plane, took off, and climbed to a high altitude (high for that plane) in preparation for the flight back to Glacier Bay. When we were at the top of a spiral climb, Bishop, the mechanic, pushed excitedly past Bert and myself and hollered at the pilot that the cabin was full of smoke, and he thought we were on fire. In a plane made of canvas and wood, this looked like the end of the trip. Jewett calmly put the plane into a dive to get back to the lake as fast as possible and then, leaving the plane to its own devices while it whistled spirally downward, he looked about, opening up flaps here and there and then told Bishop that the smoke came from his G-- d--- dirty engine. He then gently patted the control and grinned at us, and the plane gradually responded and came out of its spin. Afterward we climbed back up, resumed our course, and finally landed at Glacier Bay at 12 o'clock midnight on the Fourth of July. The landscape was lighted by the midnight sun, and a beautiful rainbow hung over the bay as we approached. Our first two days had been rather filled with adventure.

The next day we moved over to the main camp on high ground a few miles from Labine Point, where the original radium discovery had been made. When we went out into the field to do our first mapping and I attempted to use my Brunton compass, I found that the needle indicated that north was almost at right angles to what I knew to be a north-south line. Bert and I soon found that there was a wide distribution of highly magnetic material in the area, which precluded the use of a magnetic compass. We had not known this in advance, and it looked like a tough job of mapping.

We went back to camp. Using the nice round covers of the tin cans in which the desiccated milk and vegetables arrived, a few screws which the cook had in a little tobacco pouch, some wire which we found back of the cook-camp, and a small pair of snips and a screwdriver which I fortunately had brought with me, I constructed a sundial-transit. Fortunately my engineer's field book had a graduated circle on every other page, and this could be incorporated into the compass. To complete the job, I took some scraps of celluloid from the plane windows. And so I constructed a solar compass supported on a long shovel handle, which served as a Jacob's staff. The device even had a universal joint made of a piece of hardwood axe· handle and a spirit level borrowed from my Brunton compass.

The next morning we set the compass up on a true north-south line, fortunately provided by the crew of civil engineering surveyors who had been there the previous summer. I spent the day marking the time-circle on our compass every fifteen minutes from morning until evening. These spaces could easily be divided to indicate five-minute intervals.

To use the compass, we set it up vertically on the Jacob's staff; next we leveled and then rotated it to a position where the shadow of the gnomen of the sundial indicated a time that coincided with the time on my watch. Fortunately we were located almost exactly on a prime meridian, and local time and solar time were coincident. The declination of the sun changed very rapidly from day to day, so I found it necessary to install a device, invented at the time, which enabled me to correct the time circle each morning. We used this compass exclusively during our entire stay; we proved that it was accurate by checking it on a number of occasions against the data of the instrumental survey made the previous summer. I brought the contraption back with me, and it is now kicking around somewhere here in the basement with the other junk.

We eventually returned to Edmonton and enjoyed the dinner that we had talked about most of the summer.

I know that this story is getting out of hand, but just as an alcoholic can't resist "just one more drink," I must include just one more anecdote. The Vice President and Manager of Mines of the Consolidated Company was a very interesting character by the name of Archibald. He had forcefully disagreed with the man who preceded me as consulting geologist for the company, so his mission in life seemed to be to prove that all geologists were always wrong. Shortly after my arrival, he visited Mr. Montgomery in Kimberley, and Monty called me into his office to meet "the boss." Archibald gave me a dead-fish handshake, turned his back, and walked across the office to gaze out of the window. The window was constructed of frosted glass, so he saw nothing and he said nothing. I made a couple of futile attempts to start a conversation and then left, to find Montgomery laughing in the corridor. He asked me how I came out with the old man, and I reported that the old man wouldn't talk to me.

While I was in camp at Great Bear Lake, Archibald flew his personal plane for a visit to the area and was assigned to be my tentmate at the camp. (Bert had moved temporarily to another tent.) I should explain that Mr. Archibald, at the age of 60 and with bad hearing, had insisted on learning to fly and was finally and reluctantly granted a pilot's license. He was the first man to fly a plane from British Columbia to Montreal entirely within Canadian territory.

Archibald was wearing a bandage on his right hand, and I asked him what had happened. He explained that before he left, he had pulled some thistles in his garden; a thorn had been left embedded in his finger, and in the attempt to extract it, he had evidently engendered an infection. I insisted on seeing his finger, which looked like a large "hot dog." I told him that he was on the verge of septicemia and asked him to please come back to the tent immediately after dinner so that I could attend to the infection. I filled a wooden bucket with a hot saturated solution of boric acid and made Mr. Archibald immerse his hand and forearm in this concoction.

For over an hour I ladled in water which had been heated on our airtight stove and engaged Archibald in conversation while he soaked his extremity. Then I bandaged his hand with a hot compress of boric acid and finally encased it in a canvas sample bag - after which we discovered he had not removed his vest or his shirt! He consequently slept in them, with his hand above his head. In the morning he said that his finger felt immensely better and thanked me for helping him. I told him to take very good care of it during the day and perhaps he could avoid serious trouble, but the "old man" went up to Hunters Island, paddled the canoe, and had a generally strenuous day. That evening his mechanic came to the tent to get his flying suit and equipment and said that he was flying Mr. Archibald out, as his finger was paining him badly.

After I had returned to Kimberley from Great Bear Lake, I was in my neat little bungalow working on the report when Mr. Montgomery telephoned that he was sending a visitor up the hill to see me and hoped I wouldn't drop dead with surprise. I was astonished when Mr. Archibald appeared. He thanked me profusely for the attention I had given him in the far north. He said that he had flown back to a hospital in Edmonton, that the doctor in the hospital told him my treatment with boric acid was precisely the right thing, and that it probably saved his hand and perhaps his arm. This, to the amazement of Montgomery, was the beginning of a very pleasant friendship with Mr. Archibald. Whenever he came to Kimberley, his first inquiry was for me. A little kindness went a long way toward the conversion of the "old man."

There are one or two other items to close out my activities for the year 1932. I had an interesting little job to do for the Consolidated Company on Kootenai Lake in the examination of the Blue Bell Mine. I met very interesting people at the mine and was embarrassed for the entire trip when I discovered that the shoes I was wearing were not mates. In fact, they were not even the same color. I had dressed hurriedly in the dark and provided great amusement to my hosts at the Blue Bell Mine.

At the end of the year, during the Christmas recess, I was called by the office of the Corps of Engineers in Kansas City to go to the site of the proposed Garrison Dam on the Missouri River in South Dakota. This initial visit and examination was made in a snow-covered area with temperatures in the vicinity of zero. I vividly remember crossing the river through the floating ice in a flat-bottomed boat, which at the time did not seem to be either safe or sensible. This examination led to later visits to the damsite which I may tell you about in another letter.

February 20, 1959

Dear Family,

The letter from Max Mason which I mentioned earlier - the one in which he told me that President Karl Compton of M.I.T. needed a new Head for the Geology Department - had not stirred up much concern on my part. However, the plot thickened one noon in the fall of 1932 at the University Club, when my good friend, Professor L. R. Jones, Chairman of the Department of Plant Pathology, handed me an envelope with the remark that the two letters in it had no place in his files and he thought he could safely give them to me. He added the admonition: "Don't do it!"

I opened the envelope and read the letters as we stood there. One was from Professor Harlow Shapley, the well-known Harvard University astronomer and a member of the M.I.T. Corporation (the governing body of M.I.T.) He said he was on a committee concerned with the selection of a new Head for the M.I.T. Department of Geology and that W. J. Mead of Wisconsin appeared to be the best bet. Shapley said that there was no difficulty in ascertaining Mead's standing as a geologist and teacher, but he wanted Dr. Jones to tell him how Mead was regarded by his fellow faculty members. The other letter was a reply to Dr. Shapley's inquiry. I read it and told "L.R." that statements such as that were usually saved for memorial services. It was a very fine letter and made me appear to be a well-liked member of the faculty.

These letters were indeed food for thought. A short time later Dr. Leith told me that he had lunched at the Cosmos Club in Washington with Dr. Compton; Dr. Mendenhall, Director of the U.S. Geological Survey; and Dr. Bowman, President of Johns Hopkins University. Leith said I had been a subject of discussion and would probably have a letter from Dr. Compton at an early date. He was correct in this prediction; the letter came within a day or two.

This letter from Dr. Compton, which came early in January, 1934, informed me that the M.I.T. Corporation had appointed me Chairman of the Department of Geology with the approval of the staff of the Department and invited me to visit Cambridge at an early date and look the situation over. I was glad that I was not asked to come and be looked over!

As a matter of courtesy and propriety I called on President Glenn Frank and told him of the invitation. He congratulated me and requested me not to accept the M.I.T. offer until he could see me again. I agreed to this arrangement.

There was much discussion in the Mead family. We were faced with a very important question. To leave or not to leave! In a few days I packed my bag and departed for Cambridge. An old friend, Professor Louis Slichter, son of Dean Slichter of the Wisconsin Graduate School and Professor of Geophysics in the Geology Department at M.I.T., insisted that I be his houseguest. He met me at the train and took me to his home in Belmont, not far from where we now live.

On the following day I met all members of the Department and had lunch with them at President Compton's home. I recall that at this luncheon we were entertained by Professor Morris, who most realistically impersonated a young vulture just venturing to make its initial flight from a high mountain peak in the Andes.

Dr. Compton had asked me to call at his office at four o'clock. At this time he mentioned the salary I would receive (more than double my pay at Wisconsin) and removed a stumbling block which had been worrying me. The rule at M.I.T. had been that half of all consulting fees received by members of the staff must be turned over to the Institute treasury. Dr. Compton told me that this rule was about to be repealed and that he hoped I would continue my consulting practice, as he believed it would be good for the Department and the Institute. He suggested that if I had a good secretary I bring her with me and said the Institute would pay her traveling expenses and her salary. At Wisconsin I had been paying her myself.

On the whole, it looked pretty good. Please don't get the impression that my attitude toward the new position was like that of a baseball player recently interviewed by a newspaper reporter. The famous player was asked why he played baseball - was it his love for the sport, or the thrill of the crowds? He replied, "Hell no, I play for the money!" My mention of salary and consulting fees might lead you to think that I, like the ballplayer, was mostly concerned with the almighty dollar. Money was of course important, but I taught and practiced geology because I enjoyed every phase of it. I liked to work with the students and enjoyed the problems in the field.

I felt it was a good time to leave Wisconsin because I had reached the ceiling there.

I told Dr. Compton about my promise to Glenn Frank and assured him of an early decision. On my arrival in Madison I found there had been rather frantic activity during my brief absence. Glenn Frank was worried because there had been a number of successful raids on his professorial staff. When Van Hise was president, competing schools couldn't get a man away from Wisconsin, regardless of salary differences. Under Frank's administration there was a lot of unrest brought about by the Experimental College and Frank's own public criticisms of the University and the faculty. Professor John Van Vleck was leaving for Harvard, and there were others about to go.

Dean Slichter had proposed a "Division of Earth Sciences," to include all that the term implies, with W. J. Mead as Director! Imagine me acting as director with Dr. Leith as a subordinate. It just couldn't be done. So I made the big break and told Dr. Compton I would accept the position and assume my new duties in the fall.

This was a decision made by the whole family; there was no dissension, but there was a lot of discussion. It is always hard to "pull up roots" and move away from friends and familiar surroundings. Bertha's roots were deepest, as she had lived in Madison since early childhood. But she was a good sport, and the emotional or sentimental part of leaving was tempered by having the cottage to return to each summer.

It was a tough break for Judson. He had a room on the third floor which he dearly loved. Here he had his radio equipment. He had built his own amateur transmitting set for code and had acquired an amateur license for code operation. All of this treasured equipment was bundled into boxes and cartons and stored in the cottage. He was very philosophical about it, but sad.

Now came a very busy time. There was the matter of selling the house, selecting a school for Judson and Jere, deciding what furniture and equipment we would move and what we would sell or give away, how we would move to Cambridge, and where we would live when we got there.

In some miraculous fashion we managed to do all of these things. The cottage across the lake was a wonderful place to put a lot of things from the house, even including the huge turret-topped General Electric refrigerator. We sold the home for a fraction of its original cost; but we got the money, and it was better than renting.

Judson and Jere
go to The Hill School.

In April, 1934, Bertha and I traveled East to find a school for the boys and a place to live in Cambridge. We settled on the Hill School in Pottstown, Pennsylvania, not far from Philadelphia. In Cambridge we rented an apartment on Memorial Drive, where we lived for three years.

In August of 1934 we watched the loading of our household effects into a Mayflower truck. It seemed appropriate to travel to Boston in the Mayflower! We packed our luggage and the boys into the Buick and drove to the Hill School. Here we left the boys and drove very sadly to Cambridge, miraculously found the apartment after dark, without a map, found our furniture and other belongings lying just as they had been dumped in the apartment by the truckers, and by candle-light managed to dig out some bedding, set up a bed, and spend the first night in our new home.

We were faced with two big jobs: settle the apartment and get acquainted in our new environment. My files and office equipment had been dumped in my new office at M.I.T. A few days later my secretary, Mrs. Gertrude Hansell, arrived and helped to build order out of chaos.

Dr. Compton had wisely suggested that I do no teaching the first semester and use the time to get acquainted and size up the situation. I found this was an excellent idea. I learned a lot of things - some of them through Gertrude, who had sources of information not available to me. She told me, among other useful bits of gossip, that Professor Morris had been unhappy about my appointment because he had hoped to have the job himself. One day Professor Morris, in an interview which he sought, told me that he had been teaching structural geology and engineering geology and would greatly resent any change! This was an important ultimatum, as these were my principal subjects. The students were expecting a course in structural geology with me. For the second term Professor Morris as usual announced his course in Structural Geology, and I announced a course in Mechanics of Rock Deformation. When classes were about to start, it appeared that all the students were enrolling in my course; so Professor Morris very generously suggested that we give a joint course. We did just that, and one problem was solved.

At an early date I had occasion to meet the Vice Président and Dean of Engineering, Dr. Vannevar Bush. This was the beginning of a very interesting and pleasant association which has lasted to the present. (Coincidentally, my typing of this letter was interrupted for about an hour, as I struck the preceding period, by a call from Van, who just returned from two weeks in Jamaica. He dropped in at about ten-thirty in the morning to say hello, inquire about my eye, and ask how soon I would be ready to play billiards again.) We were both interested in photography, shop, tinkering and gadgets in general, and in playing billiards. In 1939 he left to become Director of The Carnegie Institution of Washington, and during World War II he was in charge of the Office of Scientific Research and Development, where he did a magnificent job including, among other important things, setting up the Manhattan Project. After about twenty years he retired and returned to live nearby in Belmont, so we were able to continue our interrupted series of billiard games.

During the first months in Cambridge we were much concerned with news from Jud and Jere at the Hill School. We felt that Jere, a real extrovert, would be satisfied and happy and would make a lot of new friends rapidly, whereas Jud, a quiet, and more sensitive boy, might be unhappy for a time. His letters indicated that our surmise was correct. But a fine thing happened which quite changed Jud's attitude. They discovered at the school that his hobby was radio and that he had an amateur's license to operate in code. There was a fine little broadcasting station at the school, fully equipped. Jud, having the only amateur license among the students, was placed in charge of the station. Furthermore there was an excellent radio laboratory or shop connected with the station. Here he constructed a complete amateur radio-telephone transmitting set. He passed the necessary examinations for his radio-'phone license and was really in clover. While he was studying physics under the Physics Master, he was also instructing his teacher in the science of radio-broadcasting so that the Master could take the examinations for a license. We were satisfied that both boys were doing all right at "The Hill," and when they came to Cambridge for the Christmas holidays we were sure of it.

I, of course, had administrative problems in the Department. Some of them were real headaches. There is nothing to be gained by reviewing them in detail or in naming names, and things eventually worked out all right. I had gratifying support from Sam Prescott, Dean of Science, and from Van Bush, Vice President. I didn't bother Dr. Compton with any of my departmental problems.

Dr. Lindgren, whom I had succeeded, continued to use his office in the Department for several years after I arrived. He carefully kept out of all departmental matters, and it was a pleasure to have him about. Each Department had a Visiting Committee which met with it at least once a year, listened to its requests, and made a report to the Corporation. It was customary to have a luncheon meeting of the Committee and departmental teaching staff. At the first luncheon meeting with the Committee after I had become Head of the Department, I of course invited Dr. Lindgren; but I was troubled by the idea of sitting at the head of the table, the seat he had occupied for years. I solved this one by having the luncheon at a round table. I wish all other problems could be solved as easily.

At Christmas time Jud and Jere arrived from school, and we had about two weeks with them at the apartment. It was fun to show them a few of the interesting spots in the Boston area and to introduce them to real sea-food. I can still see the expressions on their faces when they stared at whole lobsters on their plates at Pieroni's. I believe the first lobsters were promptly exchanged for steaks.

In the early summer of 1935 Bertha and the two boys drove back to Madison for a summer at the cottage, and I departed on a number of consulting errands. Early that summer I was asked to serve as a member of a Special Board of Review for the Federal Emergency Administration of Public Works, and agreed to do so. It was one of those public-duty jobs that can not be gracefully declined. The board was asked to report on "The Engineering Feasibility of the Santee-Cooper Power and Navigation Project and its Possible Effect on Wild Life." The project involved the building of a dam and the flooding of a swamp area, and the sportsmen were afraid it would spoil their shooting. The other members of the board were Colonel Brown, Colonel Hogan, and Colonel Willing. I couldn't escape being called Colonel Mead and resigned myself to being called Colonel as long as the job lasted.

It was an interesting assignment. We made detailed field studies and held an open hearing in connection with the wild-life part of our problem. This took place in the very formal legislative chamber of the famous old capitol building, which still showed the pockmarks of Civil War cannon balls. We sat on the ornate speakers' platform like a row of supreme court judges. The room was filled and we listened to much oratory, pro and con.

One incident had an unintended humorous twist. It was announced that the state game warden would speak. I expected a lean, tanned, out-of-doors type with first-hand knowledge of the woods and swamps. A chunky, flabby person arose and announced that he had himself prepared a statement which he would read to the Board. He started, pompously, to read his statement and immediately encountered words he couldn't pronounce. Jimmy Burns - I don't know whether he was Governor or Senator at that time - was seated next to the speaker. He raised up to a partially standing position and attempted to help the game warden with the big words, but he wasn't much help. It was evident that the statement had been prepared by a biologist who had used all the technical terms he knew, including the Latin names of the ducks, geese, and snipe. It was painful but very funny to hear the poor chap wade through the swamp of words. The Board wondered about the fate of the statement's author.

Yes, the Santee-Cooper project was eventually completed. I don't know how the ducks like it.

My old-time friend W. O. Hotchkiss, who had been State Geologist of Wisconsin and then President of the Michigan College of Mining and Technology, was made President of Rensselaer Polytechnic Institute of Troy, New York. I believe I was largely responsible for his appointment. I had lunch at the Duchesne Club in Pittsburgh with a group of Aluminum Company officials and engineers. Several were alumni of Rensselaer and were on a committee searching for a new president to succeed the one about to retire. I was asked, probably not seriously, if I would consider the position and I said I would not. They asked me if I could suggest any names for their consideration. I brashly told them that I could do better than that, that I could tell them the name of their next president. They suggested that it would be nice of me to give the name to the committee. I told them that Dr. William Otis Hotchkiss would be the next president of Rensselaer. Jim Rickey held his hand high in the air with his thumb pointing downward in the old sign of disapproval and said, "Oh no! Not that Bird! I know him." Jim went on to explain that I had persuaded him to employ Hotchkiss to check my geological findings at an important damsite and Hotchkiss had charged about three times too much for his services. The members of the committee said they thought that was a big boost for Hotchkiss. They wanted a president who could raise money for the school. A few weeks later I read in the newspaper that Hotchkiss had accepted the job. He held the position until the day he reached the age of retirement.

In addition to the Santee-Cooper work, other consulting commitments took me to the Fort Peck site in eastern Montana and to another site for TVA in Tennessee. The move from Madison to Boston had taken me far from British Columbia, and I rather reluctantly resigned from my position as consultan for the Consolidated Mining and Smelting Company.

In the spring of 1935, being Head of the Geology Department at M.I.T., I was elected as a matter of course to membership in the American Academy of Arts and Sciences. These honors that come as a consequence of position or old age are not to be taken too seriously.

In the autumn of 1935 Bertha and the boys drove back from Madison. The boys left by train for school, Judson going into his last year at The Hill. I had a busy academic year ahead, as I was starting to do more teaching and was encountering some of the administrative problems of the Department which had not come to the surface earlier.

Jud and Jere were back in Cambridge for the holidays. We were becoming a little tired with apartment life and began a search for a suitable house. We made many excursions into suburban Boston and looked at a lot of houses offered for sale. Finally, at the end of a Sunday afternoon of house-hunting, we happened to stop at a house that was under construction in the town of Belmont. One of its attractive features was a small room connected with one of the bedrooms, which I thought would make a fine radio-room for Jud. After further inspection and investigation we bought the place - 88 Rutledge Road, Belmont - where we have lived for the past twenty-two years. We still like it, but Jud and his radio are long gone.

The house was in the lathing stage, and much construction work remained to be done. The builder, who was also the owner, was very cooperative, and we were able to make minor changes to fit our own ideas.

The second semester, in the spring of 1936, was not dull. It was filled with students, lectures, and problems. The departmental secretary who had long served Dr. Lindgren was of little use as a secretary, so I gradually lost the services of Gertrude Hansell, who had come with me from Wisconsin. She became de facto departmental secretary. Dr. Lindgren had retained his office, and we continued the old secretary because I thought he would be unhappy if she was pensioned. But one day he remarked, "That woman! She exasperates me!" and the elderly secretary was promptly retired. Many trivial things like this are part of administrative work - annoying, but they cannot be dodged.

In June, Bertha and I drove to the Hill School for Jud's graduation exercises. We had a new Lincoln Zephyr and enjoyed the ride. At the school we were housed in a hot, noisy dormitory and I couldn't sleep. In the middle of the beautiful June night, barefoot and in my bright blue pajamas, I strolled about the campus and to the car parked near the main building. I tried out the back seat, found that, as advertised, it was long enough for sleeping, and the next thing I knew it was broad daylight and I heard voices of people passing! Here was I, a gray haired bald headed man, barefoot and in bright blue pajamas across the campus from where I belonged! It was one of those horrible embarrassing dreams come true! Not even a robe to hold around me. After a year of suffering I finally realized it was only four-thirty in the morning and I skedaddled back in safety.

It was a big day. Jud won the Physics Prize, and we were proud parents.

In the late afternoon we loaded up and started northward. Stopped that night at Lewistown in a second-rate commercial hotel. Bertha and Jere had a quiet room and a comfortable night, but Jud and I didn't fare as well. We had an uncomfortable but very humorous night - funny because of my efforts to quiet the noisy party in the next room.

Next day we drove to Toledo, where Bertha and the boys went to a good hotel and I boarded the train for Cambridge. The boys and Bertha continued on their way westward to the wonderful cottage, with an overnight at Father Taylor's home in Sturgis, Michigan.

My summer was, as usual, a busy one, requiring a lot of travel between widely spaced damsites. There were several in the hills near Los Angeles, California, several on the Allegheny River for flood protection for Pittsburgh, and others in Kansas and North Dakota. I was a busy traveling man, and getting tired of it.

In the autumn the family reassembled in Cambridge. Jere left for school, and Jud enrolled as a freshman in M.I.T. He lived with us at the apartment and set up the transmitting station he had built at Hill School.

The academic work went along as usual with nothing of special interest to record here. In October, 1936, an attractive invitation came to me in a letter from Governor Ridley of the Panama Canal Zone. He asked me to come to Panama as a consultant to study the problem of leakage from the Madden Dam reservoir. He said I was permitted to bring my wife at the rate accorded wives of military personnel, which was attractively low. (I believe the round-trip fare between New York and Panama was twenty dollars.) We enthusiastically accepted the invitation.

The trip was made during the intersemester period so that I would not miss any lecture periods. We boarded the S.S. Ancon of the Panama Railway Steamship Line in New York and had a pleasant deck cabin. We sailed rapidly from winter into summer weather. Stopped at Port-au-Prince in Haiti and had time to explore that interesting place. From there to Panama the trade winds kicked up a bit of sea, and Bertha was seasick for a day or two.

An army officer and his wife occupied the adjoining cabin and, like ourselves, were seated at the Captain's table. The Colonel and his wife spoke politely to us, but since we were mere civilians we really didn't get acquainted. The Surgeon General of the Army with his wife and daughter were also on the ship, but we didn't meet them till later. When the boat docked at Ancon, all passengers were lined up in the dining salon for the usual processing by immigration and customs people. While we were there, a dapper officer in white uniform loudly paged Dr. and Mrs. Mead. He then announced for all to hear that Governor Ridley had extended the courtesy of the port to us and asked us to follow him. The looks of utter astonishment on the faces of the Colonel and his wife were comical. On the dock we were joined by the Surgeon General and his family and escorted with them between rows of troops, with a band playing, to a special train for the trip across the Isthmus to Panama City, at the Pacific end of the Canal.

Soon after we were settled in our rooms in the Hotel Tivoli, the Colonel and his wife called to invite us to a cocktail party. Thanks to the thoughtfulness of Governor Ridley, we were now socially acceptable.

The leakage problem was interesting and required a lot of footwork, but trails had been cut through the jungle in most places. Sometimes we had to wait while the native boys slashed a path for us. I was constantly warned about snakes because they really were bad. I'll not try to tell you about the technical part of the job except to say that we traced the leakage water underground by putting a dye, fluorescein, into drill holes at the rim of the reservoir; we then tested for the dye where leakage water seeped from the ground, at a distance and at a lower elevation. It was an old trick and it worked very well here. The only new trick I could teach them was a way to detect the dye in the discharge water and estimate its concentration. But this is not a technical paper. I apologize.

The Lieutenant Governor and chief engineer of operations on the canal was an old friend and associate, Colonel Styer of the Corps of Engineers. He had been District Engineer in Pittsburgh, and I had seen him many times when I was a consultant on the Tygart and other dams in the Pittsburgh region. Styer was later an associate of Dr. Vannevar Bush in setting up the Manhattan Project. Later as second in command in the Philippines, he received the surrender of the Japanese at Manila. Colonel Styer, who probably instigated our trip to Panama, contributed much to our two weeks' visit. He and other officers and engineers had an interesting setup for fishing on top of a great concrete platform in the canal entrance, a remnant of an abandoned bridge or dock. Here the men had wonderful evening fishing parties; they caught fish and cooked them right there on the platform, about twenty feet above the water.

One day they organized a picnic trip far up the Chagres River above the dam and invited Bertha as the only lady guest. We went by launch as far as depth of water permitted and then by native dugout canoes far into the jungle. There were tropical flowers all about and monkeys chattering in the trees, and Bertha came out with an armful of beautiful orchids. Ashore for lunch we saw an unbelievable army of ants, a solid black stream flowing along through the jungle. It was quite a day.

Colon, the old Panama city outside of the Canal Zone, was a free port with a lot of shops, most of them Chinese. Bertha had a grand time shopping, particularly for rugs for the new house in Belmont. She did not like to carry much money on her expeditions so I deposited an adequate amount with the hotel clerk. She could go to the desk, sign a receipt, and get the amount of cash she needed at the time. This arrangement worked very well. We brought home some very nice Chinese rugs, which are still in use.

One afternoon when I joined Bertha in the hotel lobby for a cocktail before dinner, she said the blond clerk with marcelled hair had given her an uncomfortable time that afternoon. She had asked for money and he had refused because our bill exceeded our deposit! The manager had appeared and straightened the matter out. I never had liked the fellow, so I went to the desk and told him if he was worried about our financial standing to please call Governor Ridley. I insisted, rather loudly, that he call the Governor at once. The manager must have overheard, because he appeared and apologized for the clerk.

The evening before we checked out of the hotel I stopped at the desk after dinner and found the beautiful blond on duty. I told him we would be leaving very early in the morning and I would like to pay my bill later in the evening. He agreed to have the account ready. Before retiring I stopped at the desk and blondie gave me the bill. It was obviously too large. I told him that he and I both knew it was phony. I said that I would pay it and wanted his personal signature on the receipt and also wanted all the "chits" we had signed, and that after the whole affair had been checked over, things would be popping.

We crossed the Isthmus to Panama City on an early morning train and went to the Hotel Washington for breakfast. I never rode across the Isthmus without thinking of the tragic parade of adventurous gold-seekers who made the journey on foot during the California gold-rush days. At the Washington Hotel I was promptly paged and answered a telephone call from the officer in Ancon in charge of hotels and commissaries. He apologized and told me that I had overpaid my hotel bill by exactly one hundred dollars! I told him I was sure it was in error but was equally sure it would be straightened out eventually, that I suspected the blond clerk of something more than incompetence and wondered how it was worked. He told me that I had never been credited with a deposit of one hundred dollars, and all the cash withdrawals had been charged to the account. Smooth, but it didn't work!

The return voyage was rather better than the trip down. It was either not as rough, or Bertha had become a better sailor. We picked up some baskets and a couple of little mahogany tables in Port-au-Prince and had an interesting ride up into the mountains above the city.

While Bertha and I were cruising to Panama and back, Judson made good use of his freedom from classes during the intersemester period by spending much of his time at the new house, which had reached the most interesting stage of construction. He did an excellent service as supervising architect and had good cooperation from the builder, Mr. Marvin, who added a few extra touches in Jud's radio room.

Back at M.I.T. the second semester was promptly upon me. Professor Frederick K. Morris placed another administrative problem squarely in my lap. He had been teaching Structural Geology and Engineering Geology, and once again he served formal notice on me that he would resent any change in the courses assigned to him! These subjects were my own special fields of interest and experience. The students expected me to give the courses. What could be done to solve the dilemma and keep peace in the departmental family?

Fred had expressed a desire to attend the International Geological Congress to be held in Russia. With the cooperation of Deans Prescott and Bush, a year's leave-of-absence was granted to Professor Morris, at full pay. I don't remember which dean proposed this wonderful idea. This would provide a year in which to reorganize the schedule of courses, and it would require that someone be found to teach General Geology and Stratiography, probably a "visiting professor" on leave from some other school.

I offered a temporary appointment to Professor Robert Shrock, whom I had known as a fellow faculty member at Wisconsin. Shrock was a paleontologist and stratiographer, an excellent teacher, and I was pleased when he agreed to come. I hoped eventually to get him as a permanent member of our staff. I'll skip ahead of my story to say that I succeeded in doing this; Professor Shrock succeeded me as Head of the Geology Department and is still serving in that capacity.

However, there was a temporarily disturbing incident. At a late date, too late to find someone else, I received a telegram from Shrock saying that his leave of absence had been withdrawn! A couple of deans acting for the President during his temporary absence had panicked over losing another faculty member and crossed up the deal. I took the telegram to Dr. Compton's office and found Dr. Bush there. Bush remarked that they could withdraw Shrock's leave but they couldn't prevent his resignation. They asked about his qualifications and then suggested that I call him on the telephone and offer a permanent Assistant Professorship. I caught Shrock in just the right mood, so he told the deans where to go and moved to M.I.T. My administrative troubles were being licked, one by one. (Though new ones always appeared.)

One morning Van Bush dropped in for one of his frequent visits. He was complaining about foot trouble and expressed a low opinion of orthopedic physicians, saying they were bum engineers. They had made a plaster cast of his foot flat in the bottom of a pan, in what he called a "mal position." He said that if he stood on some mud or clay or other stiff but yielding material, his foot could arch normally. I had a bright idea at the moment and told him to come to my office at ten o'clock the following day, when I would make a proper cast of his foot. He thought I was joking, but I insisted I was not.

Next morning he appeared promptly at ten and, as he said, "with both feet." I had the necessary equipment ready and took him into my laboratory in the next room. Here I had a large, thin-walled rubber balloon partly filled with dry sand, with a rubber tube leading from the cork in the balloon to an aspirator (water-operated suction, if you don't know.) I had him close his hand and shove his fist into the balloon, while I turned on the water. This produced a partial vacuum in the balloon, causing the sand-filled balloon to become rigid and preserving the impression of his fist. He withdrew his fist and profanely expressed amazement. He asked why it got solid, and I told him he would get a lecture on dilatancy when we got through.

Van removed his shoe and sock, hopped onto the bench, and planted his foot on the bag which I had solidified. As he stood on the bag I admitted a little air, permitting his foot to sink and make a good impression, and then applied full suction. The foot was removed and the mould poured full of plaster of Paris. When the plaster had set, a little air pressure in the balloon caused the cast literally to float up on top of the bag. Bush thought this was wonderful and asked if I had patented the idea. I replied that the thought of a patent hadn't occurred to me, as this was the first time I had made a foot cast. Next day I received from Dr. Bush a detailed account of just what we had done, with the suggestion that I keep the letter; he said it might be useful if I ever applied for a patent. I did, and it was.

Bush told Bradley Dewey (President of Dewey and Almy, member of the M.I.T. Corporation, and a very fine fellow) about the stunt with the sandbag and he promptly appeared for a demonstration. He was interested and mystified. His mother and father were neighbors in our apartment building on Memorial Drive. Father Dewey was Professor of Economics at M.I.T. and a brother of the famous educator at Columbia University, Professor John Dewey. Mother Dewey was a wonderful woman and originally a Madison girl, so we had many things to talk about.

A few days after I demonstrated the sandbag for Brad Dewey, I had a telephone call from a man who gave his name as George Mixter and said he was a close friend of Brad's. Brad had told him about the strange behavior of a bag of sand, and he was much interested. He said he would like to see it and to bring an associate with him. I told him to come along; it was a free show, and any friend of Brad's was welcome.

The following afternoon Mr. Mixter and his associate, Mr. Carl Moore, arrived looking like two very proper Bostonians or a couple of Supreme Court judges. They didn't look like professors or scientists or even like insurance agents. They looked like business executives to me, and I began to wonder. We talked briefly and then went into the laboratory, where I demonstrated the sandbag. They didn't seem to be much interested but were trying to appear interested. They exclaimed, expressed mild astonishment, and asked a few rather pointless questions. We returned to the office, talked a few minutes and they left. I thought the whole thing was phony, called Brad Dewey on the telephone and told him so. He laughed so hard he could hardly talk and finally assured me that they were friends of his and I would have a full explanation soon. I guessed correctly that the laugh was on George Mixter and Carl Moore for their failure to convince me that they came to see the bag of sand.

A short time later Mr. Neil Rice, who introduced himself as President of the U.S. Mining and Smelting Company, called me over the telephone and asked me to call at his office in Boston to discuss a geological matter. I called on Mr. Rice in the afternoon of the following day. He told me about the operations of the Company in this country, Alaska, and Mexico and particularly about the Real del Monte Company, a Mexican subsidiary of the Smelting Company. Mr. Mixter and Mr. Moore appeared at about this point, and we had a laugh over their attempt to size me up under the pretext of being interested in dilatancy.

The purpose of the meeting was to ask me to make a detailed study of the structural geology of the Real del Monte silver district. I agreed to do this and went to Mexico early in the summer of that year, 1937, taking with me as assistants Olaf Rove and Mike Kuryla. Olaf Rove had been a student in geology at Wisconsin eight or nine years earlier and had left his job as mining geologist for one of the western copper companies to come to M.I.T. and get a Ph.D. degree. Mike Kuryla was a student in the Department of Mining Engineering, a son of the General Manager of the Real del Monte Company. Mike had lived in Pachuca, Mexico, since infancy, so he knew the language, the customs, and the people and was of great help to us.

The work in Mexico was interesting and strenuous. I wore off about thirty excess pounds climbing the Mexican hills. There were so many interesting things to see that I could write a book about them. The mining for silver was started by the Spaniards a surprisingly short time after Columbus came across the Atlantic. Many of these old mine openings skillfully arched with slabs of volcanic rock were still open and in use, but this has little to do with the story of the Mead family.

While I was in Mexico, son Warren returned to this country from Honolulu for a visit. Warren had been engaged in a variety of activities in that tropical city. He organized and operated a photo-service business which was bothering the

Japanese-American competition so they squeezed him out of business. While making deliveries on a motorcycle, he had a bad spill and as a result has a permanent, slight limp. He built and sold radio receivers and finally was employed as radio engineer and announcer by KGMB, the Honolulu radio broadcasting station. At the time Amelia Earhart was lost in the Pacific, his mother, at the cottage in Madison, was thrilled to hear his voice over a nationwide hookup reporting on the radio search that was being carried on in an attempt to locate the lost flyer. Warren had built his own shortwave radio transmitter, and occasionally Judson, at the cottage, was in radiophone communication with his brother in Honolulu.

Bertha wanted Warren to come home for a vacation. We had not seen him since he left in 1931, six years earlier. We sent him funds for the trip and he arrived at the cottage on the third of August, 1937. His mother thought he looked thin and tired and did a good job in putting some flesh on his tall, lank frame. He promptly made friends at the Madison broadcasting station and had fun doing a job of reporting the State Fair over the radio from Milwaukee.

In the fall, Bertha and the three boys packed their belongings in the car for the drive back to Boston. Just before they left the cottage, Warren had a telephone call from one of his new friends at the Madison radio station advising him that station WTMJ in Milwaukee was in the market for an announcer. Warren thought it would be fun to stop in Milwaukee and have an audition, so he went there by train, planning to join the family in Chicago that evening.

He was given an audition in Milwaukee, but before he started they told him that the job was practically filled. Before he had finished the audition, he was stopped by the off-the-air signal and was flabbergasted to hear that the job was his if he would start immediately. He remained in Milwaukee and wired his mother in Chicago. His clothes continued on their way to Boston, and Warren was left in just what he was wearing, with no extra cash. The Milwaukee job turned out to be a very fortunate break, as you will see in one of my later letters.

February 28, 1959

Dear Family,

In my last letter I told you that I spent the summer of 1937 in Mexico in a study of the Real del Monte silver district, as a consultant for the U. S. Smelting, Refining and Mining Company.

I neglected one important item. In May, 1937, before we departed for the summer - Bertha and the boys to Wisconsin, and I to Mexico - we moved from the apartment into the new house, which was practically ready for occupancy. Everything was spick and span, freshly painted, with new equipment in the kitchen and the large front and back yards full of mud. This, of course, was later to be gardens and lawn, but at the outset it was a very trackable mess.

My summer in Mexico had to be interrupted a few weeks after I arrived by a trip back to the States. I had promised Jim Growdon of ALCOA that I would return and direct the sampling of the residual soil which I had recommended for use in the Nantahala rock-fill dam.

I had not anticipated that my brief visit to the States would be a complicated international matter. But when I told Mr. Kuryla about my intended brief absence from Mexico, he talked with his Mexican lawyer, who happened to be in the office, and found that my permit to enter Mexico specified that I could enter for work in Mexico during the summer and leave in the autumn. I found that if I left at an earlier date, I would be refused readmission! This apparently simple problem required an astonishing amount of correspondence, discussion, and telephone calls. When I was finally ready to depart for the train in Mexico City, I was called back to be told that the official at the border had found a flaw in my permit to leave and re-enter and this caused a delay of another week. I was learning much about the complexities of travel back and forth across the border.

In the autumn the family reassembled at the new house in Belmont and I heard the story of Warren's new job in Milwaukee, about the big fish that had been caught in Mendota, and the yacht races that had been won and lost by the Mead brothers.

At M.I.T. we settled down for a very smooth year. Professor Morris was somewhere on the opposite side of the world. Professor Walter Newhouse had gone to the International Geological Congress in Russia, and Professor Shrock had arrived from Wisconsin. We reorganized the schedule of courses in the manner I had patiently been striving for. Bob Shrock handled general geology and stratiography, and I, for the first time, had full swing to develop courses in structural geology and engineering geology. Professor Martin Buerger handled mineralogy and petrology, and I believe everyone was happy.

The Geology Department needed an additional staff member to handle optical mineralogy and petrology. Professor Martin Buerger was doing such an outstanding job in the use of X-ray techniques in the study of crystal structures that it was imperative that he be relieved from some of his other teaching duties.

We canvassed the field of possible candidates for the position, having in mind a man familiar with the newly developed phase of petrography known as petrofabrics. This was a development largely credited to an Austrian named Bruno Saunders. It occurred to me that one of the Canadian geologists who had come to Wisconsin for graduate work and later to Europe to study under Dr. Saunders might be acceptable and interested in coming to M.I.T. This was Dr. Harold W. Fairbairn. He was tendered the invitation, accepted, and came to join the staff as Assistant Professor at the opening of the fall term in 1937. He is still a member of the staff.

Early in 1937, before leaving for Mexico, I had been approached by Mr. Lewis Cates, President of the Phelps Dodge Mining Company, who were important producers of copper in the West, to assist them as a consultant in connection with an interesting problem at Jerome, Arizona. I had made a brief trip to Arizona before going to Mexico and again went to Jerome after returning from Mexico. The problem was of such an unusual nature that I feel justified in telling you about its principal elements.

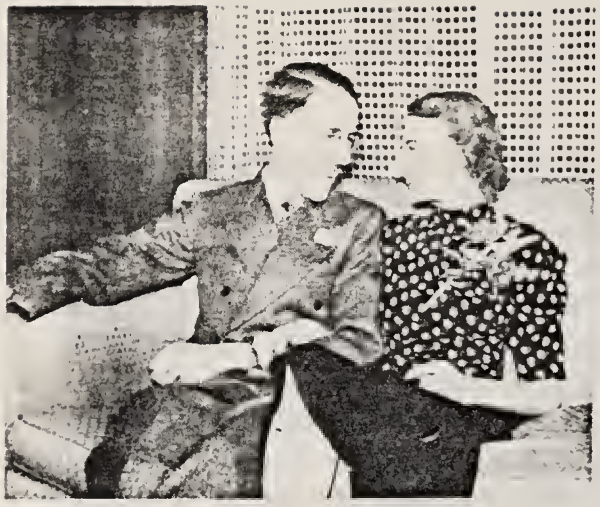
Phelps Dodge owned and operated the United Verde Copper Mine. This mine was a very large and important copper producer, which had been started as a large open cut and then carried downward into extensive underground workings. It was several miles from the town of Jerome. Directly beneath the city of Jerome and at a depth of hundreds of feet was the United Verde Extension Copper Mine, owned and operated by a competing company.

The city of Jerome had experienced damaging ground subsidence and landslides, which had destroyed buildings and streets and caused extensive damage to water and sewer pipes. The obvious assumption had been that the removal of a large volume of ore in the United Verde Extension Mine beneath the town had caused the destructive subsidence. The United Verde Extension Copper Company, in the earlier incidents, had not denied this responsibility and had, in fact, paid for some of the earlier property damage.

However, when the subsidence damage became more and more extensive, United Verde Extension made the surprising charge that the ground movement had been caused by heavy blasting in the United Verde open pit and by underground workings of the Phelps Dodge Company a couple of miles or more away. This appeared to be a ridiculous claim, but United Verde Extension was quite serious. It therefore became necessary for the Phelps Dodge Company to develop in detail all of the facts and be in a position to present a strong case, because the damage claims amounted to a large sum of money. Associated with me in this interesting prospective litigation was an old associate, Stephen Royce of Crystal Falls, Michigan, and one or two other engineers and geologists. We did a great deal of work, which included development of a detailed history of events, in which the surface damages were correlated with the progress of mining below.

I set up in my laboratory at M.I.T. some interesting studies of the mechanics of subsidence of the ground above an ore body, which we thought were convincing. Early in the spring of 1938, Mr. Cates informed me that both sides had agreed to submit the case to a technical referee and that they had chosen Mr. Ira B. Jeralemon. Mr. Jeralemon was a widely known and well-regarded mining geologist in the West who operated as an independent consultant. I told Mr. Cates at the time that, knowing Mr. Jeralemon, I could tell him in advance what the verdict would be. I ventured to predict that Mr. Jeralemon's decision would be that the two mining companies were equally responsible for the damage in Jerome and that restitution of damages should be on a 50-50 basis. Mr. Cates did not like this and said that I was crazy.

The hearing was held in Jerome in May of 1938 with all of the formality of a court trial. Several weeks later, after Mr. Jeralemon had time to study the evidence thoroughly and to meditate, his decision was announced. It was precisely what I had predicted to Mr. Cates. I figured that Mr. Jeralemon was much too smart to be so partisan in the controversy as to



Maryalice and Warren at their Wedding in South Milwaukee.

favor either party. I was convinced that the mine beneath the town was solely responsible for the damage, and I still think so.

I left directly from the hearing before Jeralemon to make my first trip to Alaska for my new client, the U.S. Smelting, Refining and Mining Company. This company had extensive placer gold operations in the Fairbanks, Alaska, area and also near Nome. We carried on a thorough study of the geology of the gold placer deposits.

This was of great interest to me. I had my first experience in an area where the ground was permanently frozen to a depth of several hundred feet, but with the surface as verdant as New England or the Midwest. During the long Alaskan summer the frozen condition below the surface was not evident at all, until certain kinds of subsurface operations were attempted. It has never ceased to be a mystery to me how the large trees - not to mention the abundant shrubbery and small trees - could flourish with their roots in the frozen ground.

This was the first of a number of summers that I was to spend in this north country. At that time travel was entirely by means of the Alaskan Steamship Line, and these boat trips were always pleasant.

While I was in Alaska, the family had a very good summer at the cottage on Lake Mendota. Warren was a frequent weekend visitor from Milwaukee and on one occasion brought Maryalice Riley with him. His mother was very pleased and somewhat excited about this; she was very fond of Maryalice, having known her since she was a little girl. In June, Warren and Maryalice announced their engagement, and on the eighth of the following September (1938) they were married at Maryalice's home in South Milwaukee. I was on a boat on my return trip from Alaska at that time and sent my congratulations by radio telegraph.

In the fall of 1938 I arrived in Belmont ahead of Bertha and Jud, who were to drive home from the cottage in Madison.

There were three to make the trip by automobile, as we had added a newcomer to the family: a young English bulldog named Nipper. I believe Nipper had been acquired the previous spring, or perhaps in the autumn of 1937.

On the afternoon of the twenty-first of September, while I was attending a long conference in the office of the U.S.S.R. & M. Co., we were interrupted by news of a bad storm. The meeting adjourned at about four o'clock to enable the suburban dwellers to get home, and I walked to Kendall Square to get my car. In the street it was blowing and raining; I was pelted with what I thought was hail, but it turned out to be gravel blown from the roofs. A large sign blew down as I approached the parking lot at Kendall. I had to detour around fallen trees and wires as I drove along Broadway toward Harvard Square, where I planned to stop for dinner at St. Clair's restaurant. A crowd was looking up at the church steeple on Church Street, but I parked and had dinner as I had planned.

After eating, I resumed my journey to Belmont and began to realize that this was really a storm. I ran into lots of trouble with fallen trees and was forced to detour all over the map, finally arriving at the house. I didn't dare open the garage doors, so I parked the car close to the building and started for the front door. On the first try I was blown down against the shrubbery at the corner of the lot. I literally crawled to the door and entered.

Inspection of the house disclosed no damage, but the roof was heaving up and down in a disturbing fashion, as I found when I put my hand against it in the attic. We didn't have many trees large enough to be blown down, but the back lawn was strewn with limbs and branches from the neighbors' trees.

I was now convinced that this was a whale of a storm, though I didn't yet know that it was a hurricane. The electric power was off, so I had no radio news. This was before the day of portable radios, or at least we didn't have one.

The worst of the storm appeared to be over by bedtime, so I gathered all the candles I could find and settled in my bed for some bedtime reading. The wind was still blowing hard, and I was more than astonished to hear the telephone ring, as I thought all wires were down. The call was a radiogram from Bertha and Jud, on the boat from Detroit to Buffalo: "All fine, wonderful trip."

They arrived in the afternoon two days later, after a rough but interesting trip. Washed-out highways had forced them to detour far to the south, where they had to detour around ships that had been blown way up on the land. They had a great tale to tell, and were tired and hungry.

This was the first of a series of hurricanes in this area and took a toll of six hundred lives in New England. We have had others since then, but there has been adequate warning of the later ones.

Jere missed the hurricane because he had gone directly to the Hill School to begin his senior year.

When the fall term started, I was faced once again with an administrative problem calling for all the tact and diplomacy I could rally. Professor Morris had returned from the Russian Geological Congress and his trip around the world. He was full of enthusiasm and energy and, as he expressed it, "eager to put his shoulder to the wheel."

I remember that in my first interview with Fred, when he expressed his eagerness to resume his teaching load, I told him I resented his thought that I was so lacking in intelligence and administrative capacity that I would ask him to resume immediately the large teaching load he had been carrying. I told Fred that we were running very smoothly, that Shrock was doing an excellent job with the courses assigned to him, and that it would be foolish indeed to waste in teaching the talents of a man who had just returned from this extraordinary trip. I wanted him to do no teaching at all during the year, but to devote all of his energy to writing and lecturing. I said I was sure that he had much that should be written, and that the people not only in Cambridge and Boston but elsewhere would be eager to hear him tell of what he had seen and learned. Fred appeared to be thoroughly pleased with this arrangement and agreed to follow my suggestion. I didn't anticipate much in the way of written material; Fred started many things, but finished few. But he did lecture. He loved to do this and did it with extravagant showmanship. With this arrangement the academic year, like the preceding one, progressed smoothly, and everyone appeared to be happy.

I may be in error a year or two, but I believe that it was this year that I was able to see the fondest wish of Professor Walter Newhouse come true. He had long talked about the need for a spectroscope in the Department. At the meeting of our Visiting Committee, Mr. Godfrey L. Cabot, a generous and wealthy member of the Corporation and of the Committee, offered to provide the funds for the building of a spectroscope. This was a very important addition to our research equipment and should have made Professor Newhouse happy and contented. The Department was otherwise very short of funds, and I remember that I personally paid the salary of a competent research assistant to aid Professor Newhouse in his first spectroscopic work. Neither he nor the Department knew that I had made this contribution.

The new house in Belmont was wonderful and greatly appreciated, especially after three years in the apartment on Memorial Drive. We had the first of our departmental supper parties in the spring. These were held in the basement and became a yearly event which everyone seemed to appreciate and enjoy.

The Department did a very handsome thing in connection with our new home. They ordered for us a selection of shrubbery and plants, and in particular a small copper beech tree. These were all planted and many of them still grow in the yard. The copper beech in the center of the front lawn was about as tall as Bertha at the time it was planted; I have a picture of her standing by the tree. At the present time the tree is much higher than the house and almost completely shades that side of the front lawn. It is one of the most beautiful trees of its kind that we have seen. It has weathered the series of hurricanes without damage, but I have had the limbs securely cabled as protection against strong winds.

On a date I do not recall, during the winter of 1939 - 1940, President Compton called me to his office to tell me that a special committee had recommended to the Corporation that the Mining Engineering Department be discontinued. This was not exactly news to me, as Bill Hotchkiss, President of R.P.I., had been on the committee and had discussed the problem with me. Metallurgy was to be continued as a separate department. Compton expressed regret, saying that he deplored the necessity of taking a step backward. I told him that I thought there was a way to take a step ahead. The geology and metallurgy students needed instruction in the field of mineral-economics, and I suggested that a good man in this field be found and added to the staff of the Geology Department. Dr. Compton requested me to start an immediate search for a suitable man.

I consulted Dr. C. K. Leith, who had become the leader in the field of mineral economics, and I also talked to Bill Hotchkiss, to R. C. Allen, a former associate and at that time an official of one of the large steel companies, to Mr. Diehl of the Oliver Iron Mining Company, and to others whom I thought were well informed and in a position to advise me. They were unanimous in suggesting a young man on the staff of the Michigan College of Mining and Technology, Mr. Roland D. Parks. Parks had done excellent work in mineral economics during the war and was the joint author of a book on mine valuation. He had also been teaching elements of mining. I arranged to meet him at the New York meeting of the A.I.M.E. in February, 1940. Bertha was with me at this meeting. The three of us returned to Boston by train on St. Patrick's Day and ran into a record snowfall that stopped all transportation in the city.

Judson, alone at the house, was supposed to meet us; but like everything else in Boston, he was snowed in. We managed to wade to the Copley Plaza Hotel and were more than fortunate to get rooms there. We were at the hotel for two nights while the town was shoveled out. It really was fun and something to remember.

Professor Parks met the Department and Dr. Compton, was offered an assistant professorship, and accepted. He reported for work in the autumn of 1940 and is still a member of the staff.

In June, 1939, the family as usual traveled in different directions. I left early for another season in Alaska, and Bertha and Judson drove to the Hill School for Jere's commencement exercises, after which they all continued to Madison for another summer at the cottage. I recall no important incidents of the summer which merit recording here.

Before I left Boston, in fact on the twenty-fourth of April, I walked into my office after being absent for an hour or two and found a large bouquet of roses on my desk. I laughingly asked who had died and was greeted with squeals and exclamations of astonishment from the Department secretary, Sylvia Bateman, and her assistant, Edna Hawley. They were surprised that I had not heard the news and handed me a telegram. I had been elected to the National Academy of Sciences! This was really an honor. I had long ago written-off any possibility of ever being a member of the Academy, and this news came as a tremendous surprise, almost a shock! I was promptly flooded with telegrams, letters, and telephone calls of congratulation. I always felt that the National Academy had been talked into the mistake of electing me by my very good friend, Vannevar Bush, aided and abetted by Max Mason, Karl Compton and C. K. Leith. I had a telegram signed by all of them. At any rate, whether I deserved it or not, I was in; and I must confess, it was a very pleasant feeling.

In the autumn, after the family reassembled, Jere entered Harvard as a freshman, and Jud began his junior year at M.I.T. One situation which I selfishly deplored began to develop when Dr. Bush told me that he had been asked to accept the presidency of the Carnegie Institution of Washington. The problem of making this decision troubled him greatly. He had become a frequent visitor at our home in Belmont. I had in-

Judson,
Student at M.I.T.

stalled a new straight-rail billiard table in the basement (please do not confuse this with a pool table), and Van and I enjoyed frequent games of billiards. After this disturbing invitation came, he was almost a daily visitor, coming to stretch out on my couch and think out loud about the matter while we had a drink together.

One day I told him he might as well quit his concern and worrying because I knew it was inevitable that he would take the job. He snapped, "I guess you are right - I would like another drink." Shortly after that his resignation from M.I.T. was announced, and he departed. He arranged his departure very carefully, under competent legal advice, and left on the first of January to establish his residence at his farm in New Hampshire! This arrangement was important for tax purposes, because the tax situation in N. H. was vastly better than in Massachusetts. And one does not have a legal residence in the District of Columbia; he simply lives there.

I was to miss Dr. Bush greatly for the following twenty years, but he finally retired and returned to Belmont in 1955 to live in a beautiful new home and to resume our billiard games.

In June, 1940, the family attended the commencement exercises at M.I.T. to see Judson get his diploma, making him a Bachelor of Science in Geology. Judson remained to do some research work in the field with Professor Slichter, and Bertha and Jere left for the cottage in Madison.

I had work to do in Canada for the U.S.S.R. & M. Company. This entailed a rather extensive automobile trip, so I took with me my personal secretary. No raised eyebrows please: my secretary's name was John Kennedy. I thought he would be useful as a part-time driver of the car and in writing such notes and reports as might be necessary on this trip. We drove through Maine and headed for various places in Nova Scotia and New Brunswick. I remember that we spent the night of July 4 in Bangor, Maine, and I didn't have to wonder why they called the town Bangor. There was too much bang for any sleeping. One of the noisiest nights I have ever spent, even including the one full of the Indian dogs on Great Slave Lake. John Kennedy was very useful as a secretary and general flunky, but as an automobile driver he didn't quite come up to my requirements. He drove some of the first day, but after that I was glad to take the wheel.

It was my first chance to get well acquainted with a thoroughly indoctrinated Catholic. John talked very freely and we had many interesting conversations. I was careful not to attempt to influence or dissuade him in any way, but I was interested to know how his mind worked. We drove on Sunday as well as any other day, and after we left Kingston one Sunday morning, I apologized to John about keeping him away from his usual Sunday duties. He told me that that was quite all right, because the night before in Kingston he had sought out a priest and made his confession. It was nice that John felt completely at ease about the matter, but the whole thing rather amazed me.

I was amused in the large hotels at which we stopped on the trip, because when I told the hotel clerks that I also wanted a room for my secretary, they invariably asked in a lowered voice, would I like connecting rooms; and when I told them the secretary was John Kennedy, their voices snapped back to normal.

I sent John back to Boston by train from a convenient spot in Canada and continued my drive, ending it in Madison, Wisconsin, where I surprised the family with my new Chrysler automobile.

I am not sure about the dates, but I believe that it was at this time that we seriously began to talk about the sad problem of selling the cottage. It was clear that Judson would not be able to take his vacations at Madison, and there was considerable question about Jere. Bertha couldn't possibly carry on alone at the cottage. The cottage had been for the boys, and the boys had grown up.

I drove back to Boston alone and on my trip through Michigan stopped at Jonesville, the little town where Bertha had been born and lived as a little girl. She had always talked about an old clock and a mirror which had been in her childhood home and thought that perhaps they could be located in the same house now occupied by an old friend - or perhaps he was a distant relative. On this matter I am not sure. At any rate, I located the clock, secured it by a combined gift and sale, and took it with me in the back seat of the car. It jingled merrily every mile of the return trip.

I also stopped and visited my good friend Bill Hotchkiss, President of Rensselaer Polytechnic Institute in Troy, and spent the night in a hotel in Troy. After driving the car back to Boston, I made a brief trip for ALCOA to the Southern Appalachians in connection with the Glenville Dam.

Jere and his mother returned during my absence in time for the fall term at Harvard, and Jud began his first year of graduate study at M.I.T.

In October, 1940, I received an interesting letter from Mr. R. S. Reynolds, President of the Reynolds Metals Company of Richmond, Virginia. He explained that his company was constructing the first independent aluminum plant in the country. By that statement I mean the first plant not controlled by the Aluminum Company of America, which up to this time had been the sole producer of aluminum in the United States. Mr. Reynolds said that the company's new plant in Alabama would require bauxite (an ore of aluminum) and asked if I would undertake the job of finding or securing bauxite for them.

I was fully employed as a consultant and was not particularly interested in undertaking this new responsibility. In my reply to Mr. Reynolds I said the question did not lend itself very well to discussion by correspondence and suggested that it might be well to meet at a convenient place in Washington or Richmond and talk the matter over. He agreed, over the telephone, that this was a good suggestion, and we made an appointment to meet in Washington. At the Washington meeting, he explained more fully the nature of the problem and urged me to undertake the task. I told him that I couldn't do this without the permission of Mr. Rice, the President of the U.S. Smelting Company. Mr. Reynolds thought that Mr. Rice would be sure to grant that permission because there was no conflict of interests involved. He then asked what arrangement I would suggest if Mr. Rice was agreeable. I suggested that this was not a matter that could be very well put on a per diem basis because I might well earn my entire fee in some critical, brief period of time, so I suggested an annual retainer. When he asked me to name the amount I named a figure which I thought was reasonable and adequate. Mr. Reynolds slapped his knee and said that was exactly the figure he had in mind. He told me that I would hear from him at an early date, and I returned to Boston.

I did not hear from Mr. Reynolds at an early date. At a considerably later date I had a long-distance telephone call from a man who had been an acquaintance and associate during part of my work with ALCOA. This was Mr. Basil Horsefield, who had been lifted from ALCOA by Mr. Reynolds to construct the new plant in Lister Hill, Alabama. Mr. Horsefield asked me to come to New York for a conference with him, and I did so. I found that Mr. Reynolds, when he returned to Richmond and reported the retainer he had agreed to pay me, had met with complete disagreement from the directors and the treasurer of the company. They felt that the fee was much too high!

In the time that intervened before the call from Horsefield, matters had become rather desperate. It was pressingly important for the Reynolds Company to secure a domestic supply of bauxite for their new plant. Any chance of shipping bauxite from foreign sources was eliminated by the scarcity of bottoms and the refusal of the shipping boards to assign shipping tonnage for that purpose. The Reynolds Company had to have domestic bauxite in order to put their new plant into operation. Horsefield explained the whole matter to me and renewed the offer that Mr. Reynolds had made. I accepted in March, 1941.

Before I had agreed to accept the job of finding bauxite for the Reynolds Company, I talked by 'phone with my longtime friend and associate in ALCOA. I had served as a consultant for this company many times, though always on a day-by-day basis, and never retained as a consultant. But I did not wish to accept a retainer from a rival concern if to do so would hazard my pleasant relationship with ALCOA and in particular with Jim Growdon. Jim said he thought it was a wonderful idea; ALCOA was facing an anti-monopoly case brought by the government and they would have been in a better position had Reynolds started making aluminum much sooner. Jim's words were "Good luck to you; but be sure to charge them enough!"

This was the beginning of a long and profitable relationship with the Reynolds Metals Company which, after one interruption that I will tell you about in a later letter, has continued to the present day.

I realized the responsibility I had assumed and figured that we would have to find the bauxite in Arkansas; nevertheless, it was important to survey all other possible sources in this country. One of my former students at Wisconsin, a boy named Carl Schmedeman, had accepted a contract with a company operating in South America after he left Madison. Under the direction of Professor L. C. Graton of Harvard, their consulting geologist, Carl had worked for several years at rather high altitudes in the Andes. I had high regard for his abilities, and I knew he was anxious to get out of South America and find work in the United States. He had been back in this country the previous summer and married a girl from Milwaukee, after which he returned to South America on a contract which permitted him to resign at any time. I felt that Carl was admirably suited for exploration work for bauxite, and I immediately cabled him in South America and offered him a position as geologist for the Reynolds Metals Company. Carl and his wife came to New York and then to Boston, where I fully briefed him on the job. He then left for Little Rock, Arkansas.

I also employed Professor Shrock and one of our graduate students, Mr. Orville Tuttle (now Head of the Department of Geology at the University of Pennsylvania.) Their job was to make a reconnaissance of bauxite possibilities in Georgia, Alabama, and Texas. Arkansas was definitely the best bet.

My arrangement on accepting the responsibility with the Reynolds Metals Company had been defined in a letter which served as a contract. I wished to avoid being at the beck and call of Mr. Reynolds and being sent hither and yon to examine bauxite properties. So I stipulated in this contract-letter that my acceptance of the position of consulting geologist at the specified retainer of $10,000 a year would include trips for conferences in Washington or Richmond; but any more extensive trips, to examine bauxite deposits in the field, would entail a per diem of $150 a day in addition to the retainer. This proposition was purely a matter of defense against a lot of field work.

I did later make some trips as far as Arkansas without making any extra charge. Carl Schmedeman immediately got busy in Arkansas, and I made several trips to that area to assist him. We had secured options on areas which appeared to have promise and had secured the services of my old connection, the E. J. Longyear Company, for the exploratory drilling. This work got under way promptly and we were fortunate, our efforts being almost immediately successful.

I was greatly disturbed one day early in 1940 by a letter from Mr. Reynolds in which he asked me to withdraw my exploratory efforts from Arkansas and move them into Alabama because he had a hunch that there were fine veins of bauxite to be found in Alabama. His letter indicated that a copy had been sent to Carl Schmedeman in Little Rock. I was much disturbed by the letter and immediately had a long-distance telephone call from Schmedeman. He was much perturbed, said that he wanted to quit the job and had no desire to work for a company that operated in this fashion. I told Carl "to keep his shirt on" and to take the first plane to Boston for a talk with me. I then called Mr. Reynolds on the telephone and told him that I thought it was time that we met for a conference. He enthusiastically agreed to this suggestion and asked me to be in Washington the following Tuesday.

Carl arrived in Cambridge on Monday and spent most of his time pacing the floor in a highly irritated state, expressing his regret over having left South America and his complete disgust with the Reynolds Company. I again urged him to keep calm until we could discuss the problem with Mr. Reynolds in Washington on Tuesday.

The meeting in Washington was typical of the conferences which Mr. Reynolds set up. As usual, he had collected all the available brass. There was Mr. Kaskie, the Executive Vice President, a very wonderful man who had at one time been Chairman of the Interstate Commerce Commission. The company's principal attorney from Richmond was present, as was Mr. Sherwin, the man in charge of alumina production. There were one or two others whose names I do not recall. When we were all assembled and waiting, Mr. Reynolds bustled in, in his shirt sleeves, sat down at the end of the table, and waving his finger to me said, "Doctor, did you get my letter? I have a hunch that there are fine bauxite veins in Alabama, and I want you to move your people out of Arkansas and find some bauxite in Alabama."

This statement really brought the matter to a head. I realized it was a critical moment. I told Mr. Reynolds that I had been laboring under a very humorous delusion and I thought he would get a big laugh out of it. When he asked what this humorous delusion was, I said I had been harboring the apparently erroneous idea that he had employed me to tell him about bauxite!

I vividly recall that there was an audible gasp in the room. No one ever dared speak in this manner to Mr. Reynolds. I was not an employee of the company, and I didn't give a damn whether he fired me at the moment or not, so I was in a position to speak freely; and I laughed as I did so. Mr. Reynolds paused and played with his pencil; and then, carefully waving the pencil at me, he said that when he had realized that his new plant demanded that bauxite be found in this country, he had made a search for the best bauxite geologist in America and had found Dr. Mead! He said, "I certainly employed you to tell me about bauxite."

I said I was pleased to hear this and would tell him a few things about bauxite that he probably did not know. I told him that we had anticipated his desire to find bauxite in Alabama and searched this area and found that the Alabama bauxite was in small spotty deposits, very high in iron. I realized that it would be nice to find bauxite near his Alabama plant, but none existed there. I told him that we looked as far as Texas and eventually decided that the best place to look for bauxite was in Arkansas.

Then I told Mr. Reynolds that we had already, in just six weeks of drilling, found over 60,000 tons of high-grade bauxite; and our job was only started. Mr. Reynolds said that he had not known this, and I told him that we did not have time to report to him daily or weekly. He then remarked that we didn't want to walk away from that, did we? I agreed that we didn't want to walk away from it, but I had received orders from him to walk away from it.

At this point I summarized all our ideas on the subject for Mr. Reynolds, saying first, "I am sure you would like to have a million tons of bauxite in Arkansas." He agreed. I said that he would probably be happy to find this bauxite if it cost him a dollar a ton to find it, and he agreed with this, too. I then told Mr. Reynolds that I would guarantee that we would find him at least a million tons of bauxite in Arkansas during the coming summer at a cost of much less than a dollar a ton, but this could not be accomplished unless we had a great change in the general setup. I said we were operating under very heavy competition, at which he immediately assumed that I meant the Aluminum Company of America. I replied that that wasn't so; our serious competition was with the Reynolds Metals Company. Reynolds Metals had let it be known that they were willing to buy bauxite from anyone in Arkansas at extravagant prices. As a consequence of this, many small companies and syndicates emanating from various crossroads in Arkansas were seeking options on bauxite properties, with the idea of mining and selling their product to Reynolds. That was the competition. I asked for a public announcement that Reynolds Metals would not buy any bauxite in Arkansas, figuring to thereby stifle this competition.

At this point Mr. Kaskie inquired, "What about the Sweet Home Mine?" and went on to explain that we were about to sign a contract to purchase all of their product. I told him not to sign the contract but to buy the mine, because the Reynolds Company was their only possible customer. (A year later I was told by the new President of the Reynolds Mining Corporation, Mr. Walter Rice, that they had failed to take my advice on that point and that the failure had cost them over a million dollars.)

I continued my statement to Mr. Reynolds by saying that the property on which we had found bauxite was bounded by a fence, beyond which there was no doubt a continuation of the ore body; but we did not control this adjoining property. I told him that we had an option on that property but that the option was in Richmond on some lawyer's desk, and we would lose our opportunity if we could not exercise the option promptly. He asked if we could telegraph and close the deal, at which Carl Schmedeman nodded his head. Mr. Reynolds motioned him out of the room and told him to send a telegram and close the deal.

I went on with the series of requests, saying that we were operating under the name of the "Bauxite Mining Company," which meant nothing to the Arkansas farmers. I said I would like to see the name changed to the "Reynolds Mining Corporation." Mr. Reynolds turned to the attorney to ask about this, and the attorney nodded. Next I asked that Carl Schmedeman be made an officer of the Reynolds Mining Corporation, with power to negotiate and close deals without referring the matter to attorneys outside of Little Rock. My next request was that an initial deposit of $200,000 be made in the bank in Little Rock, subject to the personal check of Carl Schmedeman; that way he could lean over the fence, talk with the farmer, get him to sign an option on the dotted line, and hand him a check, all in one operation. I told Mr. Reynolds that if we could operate in that fashion, I would guarantee him his million tons of bauxite, and more, that summer. Carl was not in the room at that time, so I added that though I knew Carl was honest, they would wish to bond him.

Carl returned and reported that he had sent the telegram. Mr. Reynolds read from his penciled notes the requests that I had made and said he would return immediately to Richmond and could guarantee that all of these requests would be complied with.

The meeting was over and we left the room, but Mr. Reynolds took me by the elbow and guided me into an adjoining office. I thought, of course, that I might get the axe, but Mr. Reynolds' remark was not in that vein. He said, "Doctor, I also have been laboring under what you call a humorous delusion. I thought you were a college professor." I laughed and told him that I confessed to being a college professor and asked what he thought I was, if not just that. He replied that he thought that I was a damn good business man, and I expressed surprise that he felt that a college professor could not be a good business man.

I feel sure that in this one meeting I accomplished more and made more money for the Reynolds Metals Company than I have made during the entire remaining period of my employment as a consultant. Under these almost ideal new arrangements, Carl Schmedeman happily continued his work. Our efforts produced, as the advertising men say, "Not one, not two, but about three" million tons of bauxite that summer.

March 8, 1959

Dear Family,

After the crucial meeting in Washington with Mr. Reynolds, Carl Schmedeman returned to Little Rock with renewed determination and enthusiasm. The exploration was proceeding effectively and with excellent results. I spent some time in the field with Carl early in the summer and did one or two professional errands for ALCOA in the Southern Appalachians. I also had work to do for the U.S. Smelting Company at their Boston office.

Jud had left for Quonset, Rhode Island, where there was a Navy air station, to take part in some highly secret research program. He did not expect to return to his graduate studies in the fall and in September wrote a letter resigning as teaching fellow and indicating he had accepted a position with Columbia University. I believe the work at Quonset was a project directed by Columbia.

Later in the summer I traded in the Chrysler car for an Oldsmobile with the new hydramatic gear shift, which I liked much better. I drove to Madison and spent a couple of days with the family at the cottage. There was much discussion of the sad realization that cottage days were almost over and consequently talk about selling the property. I left Madison to drive alone to Arkansas. The following day, about sixty miles south of St. Louis, I had my first experience with a head-on collision.

I never drove without awareness of the possibility of accidents and was always careful to do all that I could to avoid them. On a black-top country road, winding its way through a wooded area, I met an Arkansas driver who was in a hurry. At a high speed he came swinging around a curve on the wrong side of the road, and we met head on. Perhaps it was fortunate that he was driving the same model and make of car, because the bumpers met squarely, which probably reduced the damage. I was thrown violently against the steering column and bent it forward into the instrument panel. I was not unconscious even for a moment and rather calmly surveyed the situation. Then

I climbed over into the back part of the car, because the front doors were jammed, and got out. No glass was broken, but the car could not be driven away. A survey of my own personal damages showed a cut knee, cut lips, and a couple of broken teeth, caused when my head had snapped forward against the steering wheel. A couple of beautiful black eyes developed later. I was offered a ride into the nearest town by a kind passing farmer and his wife, and I left orders with the proprietor of the nearest service station, who had appeared on the scene, to tow my car to that place and hold it there for further instructions. I thought of photographing the wreck but was not in a condition to use my camera, because I was a rather bloody mess.

After transferring my luggage into the other car, I was taken into the little town of Lewisville. On the way I inquired about doctors and surgeons, and one was highly recommended to me. The kind driver took me first to the local hotel, where I left my luggage, and then to the doctor's office. Here I was put on an operating table and had my face and knee cleaned up by an efficient nurse. The doctor went to work to sew up my knee and lips, after first giving me a generous application of something he was very proud of. This was one of the new sulpha drugs that had been developed and was widely used in the care of the wounded in the European war. The doctor explained that I must have a shot of anti-tetanus serum and that I must remain in his office for an hour because undesirable side effects might develop.

As I sat in his front office, I read the sign which gave his name and indicated that he was an osteopathic physician, and I muttered to myself, "Oh-oh."

I had the doctor phone a local car owner to drive me back to St. Louis, and then I went to the hotel and sent out for a bottle of milk and some straws. I punched a hole through the bottle cap and drank the milk through the straws because my face was in no shape for eating. I was driven into St. Louis, arriving there late in the afternoon, and went to the St. Andrews Hospital. This hospital had been recommended to me, and I had also secured the name of a surgeon from Dr. Buhler, the State Geologist of Missouri, with whom I had talked over the telephone while I was drinking my bottle of milk. The hospital turned out to be an Episcopalian one. Although I was a total stranger and looked like a badly damaged, bloody tramp, I was admitted without question and given superlative care and treatment. The surgeon gave up his dinner hour to do a new hemstitching job on all of my damaged areas and fortunately found a fragment of my trousers which had been shifted under the kneecap of my knee. He humorously remarked that this was most fortunate, as I might wish to have the trousers repaired and this piece would have been missing! My wounds healed in miraculous fashion. The stitches were put in on Wednesday, and the doctor was able to remove them on Saturday. Perhaps the rapid healing should be credited to the sulpha drug, in combination with the clean life I had led!

I left by train for Boston Monday morning, had my broken teeth replaced by my own dentist, and was ready for the start of the fall term. But first, more problems with the Reynolds Company.

The exploration in Arkansas was being pushed as rapidly as possible and it became imperative that mining operations be started at the earliest possible date. The Alabama plant was rapidly approaching a time when it would require bauxite. And then complications developed. I was astonished one day to learn that the Reynolds Metals Company had employed a certain mining engineer to take charge of their mining operations in Arkansas. I recognized the man named as someone who had asked me repeatedly to find a job for him. I knew of his reputation and I was sure that he was not the man for this job.

I had an early wail over the telephone from Carl Schmedeman about the man and the impossibility of using him. Later came a long-distance telephone call from Mr. Reynolds who was at the time an impatient patient in the Johns Hopkins Hospital in Baltimore. I met with Mr. Reynolds at the hospital; we sat on opposite sides of a small table, and I remember that his appearance suggested a chunky oriental potentate dressed in a royal red robe.

Mr. Reynolds was greatly concerned about the matter of the mining engineer and asked my advice. I told him to fire the man; I had seen his contract and knew that good terminal facilities were provided. I told Mr. Reynolds that the man we wanted already had a good job and that we would have to offer him a better one. This man could not be found by correspondence, but someone would have to start on the mission in the manner of a Royal Mounted Policeman out to "get his man." Mr. Reynolds asked me if I could do this; I said that I thought I could and was immediately dispatched on this important errand.

I went to Duluth, Minnesota, because I was looking for a mining engineer familiar with both open pit mining and underground mining as well as with the handling of soft ore. I went to the offices of my old friends, the Oliver Iron Mining Company and the Pickands-Mather Company, where I explained my mission. I spent the next week or ten days interviewing all the mining engineers that these two organizations would have been glad to get rid of, but I did not get taken in.

At last Mr. Archie Chisholm of the Pickands-Mather Company called me to his office and told me that he had a mining engineer whom he considered to be the best man on his staff - his right arm. He said that this man had recently completed operations at a mine in the Kuyuna district. Since he could not put him in the place of a younger mine superintendent at one of the other properties, he was going to use him in the office. He asked if the position in Arkansas offered an opportunity to do something important in the war effort, and when I assured him that it did, he said that he would be willing to have me interview Mr. Zeglin. He arranged to have Mr. Zeglin come to Duluth the following day and meet me at my hotel room.

It only required five or ten minutes for me to know that I had found the man I was looking for. Zeglin's entire concern was whether or not he would be doing something important for the country. He had served in World War I and had tried to get into the armed services in the present war without success. He made no inquiry about remuneration, which showed where his principal interest lay. I suggested that he pack his bag, go to Little Rock, meet Carl Schmedeman, and size up the job. He left immediately for Little Rock, and I left for Boston. Mr. Zeglin's visit to Little Rock was extended for weeks; he remained there to order machinery and other equipment and make plans for opening up the properties.

Zeglin - to me and to all of his other friends he is "Zeg" - has done a magnificent job for the Reynolds Company. He is now Vice President and Manager of Mines for the Reynolds Mining Corporation, responsible for their mining operations not only in Arkansas but also in Jamaica, Haiti, and South America. My trip to Duluth was eminently successful!

The academic year began as usual, and there is nothing special to record in this connection. On the 7th of December, 1941, came the world-shattering event of the Jap attack on Pearl Harbor. This, of course, was to make a great change in all our lives. Early in the following year we began to be aware of what was coming in the way of austerity. It was clear that there would be rationing of gasoline, heating oil, and food, as well as other things. The entrance of the United States into the war had, of course, been anticipated, in spite of the promise to keep us out of it.

Mr. Reynolds had been a most foresighted citizen. He had been in Europe previous to the advent of war on the continent and came home thoroughly convinced that our domestic capacity to produce aluminum was woefully inadequate. He had tried to impress people in the administration at Washington with this idea, but everyone assured him that this country, through the Aluminum Company of America, was in a position to produce all of the aluminum we could possibly require.

Mr. Reynolds did not believe this. Without any authoritative backing at all, except that of his reluctant Board of Directors, he had mortgaged all of the assets of the Reynolds Company and proceeded to build the first independent aluminum plant in America. By independent, I mean the first plant independent of the Aluminum Company of America. He had gone to his friend, Mr. Jesse Jones, who had to do with the government financing of such things, but without success. After Pearl Harbor, Mr. Reynolds' courageous program was thoroughly vindicated.

Mr. Reynolds was a man of small stature, but in no way a small man. It was fitting to call him a "human dynamo." He had great energy and was impatient with people who differed with him. I personally found this out on many occasions! There was an interesting similarity between Mr. Reynolds and another great president of the aluminum industry, Mr. Arthur V. Davis of ALCOA. The two were astonishingly alike in drive and energy, though very different in other respects. Mr. Davis had been trained as a chemist and was quick to understand and appreciate technical matters pertaining to the production of aluminum. He took a great interest in many branches of science and knew much about botany and zoology.

Mr. Reynolds was a business man, and particularly a supersalesman. He had little understanding of scientific or technical matters and was concerned with them only so far as they had immediate promise of profit.

I had known Mr. Davis quite well and appreciated his capacity to think in terms of scientific and technical approaches to problems. It took me some time to realize that Mr. Reynolds' point of view was completely different. My failure to appreciate the fact that Mr. Reynolds did not understand the technical side of our problems sometimes made the job difficult and expensive for me. But more of that later.

Jeremiah,
Student at Harvard.

March 14, 1959

Dear Family,

These were uneasy times. Our country was at war, and mobilization was disturbing and confusing. The young men didn't know when or where they would be called. News from the Pacific area was not good, Price and rent controls were anticipated, as was rationing of gasoline and fuel oil and some foods, particularly meats.

This was 1942. Bertha and Jere did not go to the cottage in Madison; Jere went to summer school, in order to be graduated earlier. I spent the summer on various professional errands, several to Arkansas.

In 1942 it became evident to me that we would be seriously restricted in gasoline and heating oil. Both of these restrictions would make living in Belmont more difficult. I wanted to rent a coal-heated apartment within walking distance of M.I.T., and finally sold the idea to the family against strong opposition. We found a first-floor apartment on Pinckney Street, at the end of Louisburg Square on Beacon Hill. For three winters we divided our living between the Belmont home and the apartment. On Friday night we went to Belmont, turned up the heat, and enjoyed the house until Sunday night or Monday morning, when we returned to Pinckney Street. Thus we had enough gas for the round trip to Belmont, and by keeping the house at about 40 degrees through the week we got by on furnace oil. The apartment idea worked fine, and we felt that the weekly change of scene shortened the winters.

In the autumn of 1942 the academic year began as usual but with a very mixed-up bunch of students, uncertain about the future. Jere began his senior year at Harvard as a pre-med student, having decided to go into medicine as a profession.

Judson was engaged in a secret research program for the Navy with headquarters at the Quonset Naval Air Station. I later learned that his work had to do with the development of an airborne magnetometer for detection of submerged submarines from planes. As part of this job he went to California late in the summer and spent several months on the west coast. We later heard that Jud's work was full of high adventure. He spent many cramped, uncomfortable hours in planes and was the first to actually lower a magnetometer from a plane. Glad we didn't know about it while it was going on.

In the spring semester of 1943 practically all of the students were in uniform, and the subjects given were prescribed by the Army or the Navy. There were large classes in geography. Professor Morris was busy teaching geography and Professor Shimer was brought back from retirement to assist in the instructional work. I had a class in engineering geology for army engineers.

Members of the departmental staff were widely scattered. Professor Fairbairn, being a Canadian, returned to that country. Professor Newhouse, under the direction of the U. S. Geological Survey, was occupied on matters pertaining to strategic metals and minerals in this country and Africa. Professor Buerger was "drafted" to teach physics. Professors Shrock and Parks were serving in Washington on the staff of the War Production Board. Professor Slichter was engaged in secret development work for the government.

I kept in close touch with the Department, but spent much time on the problems of the Reynolds Metals Company, as aluminum had become a crucial metal in the war effort. I had very few administrative duties at M.I.T. so I requested that I be placed on a reduced salary basis and accepted a "token" salary for the duration.

In May we were rather anxiously looking for a message from Warren and Maryalice in Milwaukee, because they were expecting a baby. They had lost their first baby at birth and we were much concerned. On the eighteenth of May, 1943, twins were born, a boy and a girl. The boy baby died at the hospital soon after birth, and Maryalice and the baby girl were hurriedly moved from the hospital. The baby was Kathe, now a lovely young lady.

In 1943 Judson's research for the Navy was moved to Long Island from Quonset, Rhode Island, and he lived in Garden City.

Jere's accelerated undergraduate program was completed early in the year, and he entered Harvard Medical School in

March. He was inducted into the Army in June. The Medical School became part of the Army, with all medical students in uniform and an army officer in charge.

Late in the summer of 1943 I went to western Mexico for the U. S. Smelting Company. There was geological work to be done at the Artemisa property, a small zinc mine. This was reached by railroad on the line that runs south from Arizona. The nearest town, where I arrived and departed and spent a few hot nights, was Hermosillo. I remember that my room opened onto a large flat roof. While I was roasting there one night, a heavy tropical rainstorm arrived. I jumped from my bed and ran out into the rain in my shorts and had a wonderful cold shower. The men from Pacucha who had joined me at the mine came and went by plane; but since plane travel was restricted to essential work, I, traveling as a tourist, was forced to make the long, very hot trip across Mexico by train. There were Pullman cars, but they were not air conditioned. I had a drawing room and found that by traveling in my birthday suit and with the help of the electric fan, I could survive.

With the staff of the Geology Department widely dispersed on various types of "war work," and with no geology or related subjects being taught, my administrative duties had been reduced almost to the vanishing point. The Department had been encroached upon, room by room (or more properly expressed, bay by bay), by the Departments of Metallurgy and Chemistry. Offices had been taken over and their contents piled in the lecture room; I could point out one pile as Professor Shrock's office, and another as Professor Fairbairn's office. I tried valiantly to halt this invasion, and at times it was tough going. In the fall of 1943 there was no academic work in the Geology Department. I continued to battle for our remaining space.

Bertha and I lived an oscillating life between Belmont and Beacon Hill, and we enjoyed it. Jere was in Harvard Medical School as a Pfc. He was able to visit us occasionally at the house or the apartment. Judson was in Garden City, still busy with the "hush hush" research work. Early in 1944 he told his mother that he had another project under way. Jud had found the girl he wanted to marry, and if Jud had picked her out we were sure she was wonderful. When we saw Jane Stanley, we knew she was wonderful. Jane's parents were living in New York City that winter; Bertha, Jere, and I attended a reception announcing the engagement, at the Stanley's apartment. I remember Jere's remark: "Imagine old Jud getting a queen like Jane!"

Jane and Judson;
Bride and Groom.

Jane and Judson were married on the twelfth day of May, 1944, in the Church of the Ascension in New York City. It was a beautiful wedding. We were all there and very happy about it.

There are three more family matters to relate before I get back to less interesting things. One very important item is that we paid off the mortgage on the Belmont home that summer.

A much less pleasant event was the sale of the Lake Mendota cottage. This really was sad, particularly for Bertha. Here she saw the boys grow up, watched their sailboat races, swam with them in the lake. Bertha really raised the boys. I had little to do with it, because my work kept me away all summer every summer. I missed more than I realized at the time. In October, 1944, we both went to Madison and sold the place to a Mr. J. G. Comford, whose name is of no importance at all in this story.

A much more pleasant event came on the fifteenth of November, 1944, when Jerud Jonathan was born in Milwaukee to Maryalice and Warren. Now we had two grandchildren, a girl and a boy. But this was only the start!

Exploration for bauxite in Arkansas had been very successful. Zeglin, the mining engineer from Duluth, had accomplished the impossible in getting the ore out of the ground. The Reynolds Company was now mining bauxite, converting it into alumina and reducing the alumina to metal. Mr. Reynolds was pleased, but the demands for aluminum were increasing faster than the country's production capacity.

At about this time I told Mr. Reynolds that eventually there would not be enough bauxite available in Arkansas and urged him to permit us to explore elsewhere. I was sure bauxite would eventually be found in Central America and in the Caribbean Islands. I couldn't sell the idea, because Mr.

Reynolds was sure we had enough in Arkansas. Too bad he didn't let us go, because less than two years later the Aluminum Company of Canada found bauxite in Jamaica. We might have been the first.

I attended the annual meeting of the American Institute of Mining and Metallurgical Engineers in New York. While a group of acquaintances including Leith, Hotchkiss, Aldrich, and one or two others and myself were talking in the lobby, Dr. Mendenhall, Director of the U. S. Geological Survey, joined the group and told us that he had retired as Director and that Secretary Ickes was in the process of appointing a successor. We were greatly disturbed to hear this and to learn of the candidates Ickes was about to approach. It appeared that a great mistake was in the making and that something should be done about it. Various suggestions were made, all of which involved the writing of letters. I suggested that this was a matter in which the National Academy of Sciences should function. (The Academy had been originated under President Lincoln to serve in an advisory capacity to the government in matters pertaining to science.) I further suggested that I thought Dr. Bush and Dr. Compton might be in a position to urge President Jewett of the National Academy to do something about it immediately. Leith, who had an office in Washington, did not wish to become involved in the matter because he had other important matters to be handled by Secretary Ickes.

I was dispatched immediately to Cambridge to contact Dr. Compton and, through him, Dr. Jewett. In Cambridge I found that Dr. Compton was in Washington. I located both Drs. Compton and Bush in the latter's office by telephone. Neither man wished to become involved in anything controversial with Mr. Ickes, but they suggested that I get in touch with Dr. Bowman, President of Johns Hopkins University. A long-distance telephone call found that Dr. Bowman was at the Cosmos Club in Washington. I called him there, and was told that he had just checked out; but the alert clerk who answered my call saw Dr. Bowman walk past the desk on his way to the door, called to him, and got him to the telephone. Dr. Bowman recognized the seriousness of the problem immediately. He said that he was personally well acquainted with Secretary Ickes and that he would call on the Secretary to explain to him the availability of the National Academy to aid him in selecting a successor to Dr. Mendenhall.

This plan worked astonishingly well. Secretary Ickes promptly sent a letter to Dr. Jewett, the President of the National Academy, requesting advice from the Academy in the matter. Dr. Jewett appointed a committee including Dr. Elliott

Blackwelder of Stanford University, Dr. Hewitt of the U. S. Geological Survey, Dr. Chamberlin of the University of Chicago, and myself as Chairman to select a list of men whom we could recommend to succeed Dr. Mendenhall.

This Committee met as soon as it could be brought together. It was our unanimous opinion that the best man for the job was Dr. William Wrather, a prominent petroleum geologist, who had been operating as an independent consultant and was not affiliated with any one of the large companies. Before making this recommendation to Secretary Ickes, I was delegated to talk to Dr. Wrather. He was in Washington at the time, and I had him over to my hotel room the following morning. He was not enthusiastic about the idea, but I apparently was adequately persuasive, because his name was sent to Secretary Ickes. Wrather was promptly appointed. This was in 1945. He served for many years as able Director of the U. S. Geological Survey.

Mr. Reynolds, who had become imbued with the importance of research for the aluminum industry, talked at length about setting up a research center at Glen Cove on Long Island. Several years previously he had purchased the Woolworth estate near Glen Cove, Long Island. This included a marble palace, magnificent in a way which I had never seen. Though the mansion had not been occupied for some time, it had only deteriorated in very minor ways. It had everything that a very wealthy man could wish for, but taxes eventually made it impossible for anyone, regardless of wealth, to be able to maintain a place of this degree of magnificence.

Mr. Reynolds planned to rebuild a large building, formerly used for service quarters and garage, into research offices and laboratory; he would use the mansion itself as a combination clubhouse and showplace. Here important guests would be entertained and Board meetings held, and here the director of the operation would reside.

A housekeeper was brought from Richmond - a very dignified lady whose regal manner promptly earned her the sobriquet of "the Dutchess."

I was persuaded to undertake the job of organizing and directing this research center and did so until 1945, when I resigned. It took me this long to find that Mr. Reynolds thought of research as window dressing for sales and expected it to pay rather prompt dividends. He was perfectly sincere and honest in this, and I displayed lack of intelligence in not realizing sooner that the word research meant different things to him and to me.

I feel that I should tell you next about a minor event unrelated to geology or mining, but having a certain element of humor that justifies the story. Perhaps you will recall that in an earlier letter I told of making a plaster cast of the ailing foot of Dr. Vannevar Bush. Early in the summer of 1944, Dr. Bush, who had taken on the tremendously important government job of Director of the Office of Research Development, told me over the telephone that he had recently made a trip with an army officer who was wearing an artificial limb. He had talked at length with this officer and heard from him about the apparently crude methods used in fitting the socket of the artificial limb to the stump of the amputee. Bush said he thought that my sandbag method might afford a better way of making the socket and asked if I would be willing to disclose this to the proper people in the Army. I told him that I would be glad to do so if he would send the Army up to my laboratory.

After the conversation, I thought that it might be a good idea to protect this use of dilatancy so that some clever stranger could not beat me to it and obtain control. I therefore made application for patents to cover various applications of the idea.

After several telephone conversations and at the request of Dr. Bush, I assembled and shipped the necessary equipment to the Walter Reed Hospital in Washington and went down there on a very hot day to demonstrate the method before the army personnel with whom Bush had made arrangements.

I had difficulty in finding a suitable place for this demonstration, but it was finally arranged in the laboratory where the sockets were being made for amputees. Dr. Bush - accompanied by a colonel, a major, a captain, and perhaps a lieutenant of the Medical Corps - appeared at noon. The army officers stood at attention and watched skeptically while I demonstrated the principle involved. They showed little interest and much ignorance, and Bush came around to me and whispered, "Pack up your junk and meet me at the office - these birds are all dead from the neck up." I met Van at his office and found him apologetic and thoroughly disgusted. I knew, perhaps better than did he, that it is almost impossible for a civilian to tell anything to an army man in uniform.

A short time later I had another call from Van in Washington. He asked me if I would be willing to take a chance at showing my idea to the Navy. A little later, accompanied by Dr. Lyman Chalkley of Dr. Bush's staff, I went to the large Naval Hospital in Philadelphia. Dr. Chalkley had made arrangements for this visit with a navy commander in the Medical Corps, whose office was in the hospital. On our arrival we could find no trace of the officer with whom we had the appointment. After being shunted around, we ended up in the service shop of the institution with a couple of charitable young navy doctors who were rather apologetic about the failure of the medical officer to keep his appointment.

I was quite willing to demonstrate to these younger men the principle involved, but the only faucet on which the equipment could be attached was in the men's room, technically known in navy parlance as the "head." Here, on an improvised table over a janitor's service tub, I demonstrated the process; but I warned them that I would be very unhappy if it was ever announced that Professor Mead from M.I.T. put on a demonstration in the "head." Dr. Chalkley and I left; I amused, and Chalkley very angry. Over the telephone Van Bush again apologized and was resigned to the fact that it was impossible to teach the Armed Forces anything.

Some time later a National Committee on Prosthetics was appointed, with Dr. Klopsteg as Chairman. The Chairman immediately got in touch with me and came to Boston to find out from me about the dilatancy process. Before this happened, I had a call from the Director of Research of the United Shoe Machinery Company, which call was instigated by Dr. Killian of M.I.T. The Director of Research was very much interested in the dilatancy process. He immediately set up a laboratory at their plant in Beverly and began an attempt to develop a method for making sockets for artificial limbs. In this connection I made many visits to the Beverly plant. We developed a workable and relatively simple device for making an impression of the stump of an amputated limb and a suitable, properly fitting socket.

This I was able to report to Mr. Klopsteg when he came to see me in Cambridge, and he immediately arranged for the entire Committee on Prosthetics to go to the Beverly plant of the United Shoe Machinery Company. They appeared to be delighted with the progress that had been made, and I was highly amused at the clumsy efforts of the medical officer who had witnessed my futile demonstration at the Walter Reed Hospital as he tried to apologize for the treatment that I had received at that time. It is extremely difficult for an army officer to apologize to a civilian! The process and equipment produced by the United Shoe Machinery Company was turned over to some concern in Chicago, but I have never heard whether or not this was used to any extent for the purposes intended.

During the time that development work was going forward on the socket for artificial limbs, I made frequent trips to the

United Shoe Machinery Company plant in Beverly. In the autumn or late summer of 1944 Maryalice spent a few days with us in Belmont. On one of the drives to Beverly, Bertha and Maryalice went with me for the ride. While I was busy at the plant, Bertha took Maryalice on a short sight-seeing drive. In Marblehead they asked a woman they saw walking along the sidewalk to direct them to Marblehead Neck. She graciously offered to go with them and show the way. The guide was Mrs. Myles Standish, who lived in Marblehead, and this chance meeting led to a lasting friendship. Bertha and Mrs. Standish even found that they were born on the same day! Bertha was persuaded, as a result of the meeting, to join the group of Episcopal women who operated the Pennywise Thrift Shop on Huntington Avenue in Boston. She still goes to the shop two days a week and serves as a director of the enterprise.

I served through the year as Director of Research for Reynolds Research in Glen Cove and gave serious consideration to resigning from M.I.T. and taking on this job with the Reynolds Company as a permanent responsibility. I had talked about this possibility at the Institute and later became aware that at least two people had been very pleased at this prospect. These two individuals obviously were disappointed when, in 1945, I decided to remain at M.I.T. Both Dean Harrison and Professor Walter Newhouse had lost no time in starting a search for my successor when they learned that there was a possibility of my resigning. In fact, things had moved to a point where I seriously wondered whether I did indeed have a job at M.I.T. I went to Acting President Killian with this question and he assured me with apparent enthusiasm that I definitely did have a job as Head of the Department of Geology and that he was more than delighted to know that I had decided not to leave.

Professor Newhouse was obviously shocked and disappointed. When I went to his office to tell him of my decision, he said hesitatingly, "Well, is that so," turned his back, and walked across the office to look out of the window. All of this was very revealing and helped me to understand his strange behavior in the subsequent years, particularly at the time of his resignation.

In 1945, I resigned as Director of Reynolds Research and was continued on a much reduced stipend as consulting geologist. This resignation involved a rather free discussion of ideas and differences with Mr. Reynolds. It was the kind of frank discussion that he did not enjoy. One of the points that I made at this time was that research was made difficult because Mr. Reynolds constantly interfered with it, instead of delegating

Dorothea and Jeremiah;
Bride and Groom.

the responsibility to a competent man and permitting him to operate without interruption. I vividly recall that Mr. Reynolds, with a characteristic gesture, shook his finger at me and said, "Doctor, I never interfered with any of your exploration operations." I told him that he was mistaken in this statement and handed him the letter which he had written, instructing me to move my exploration crews out of Arkansas and into Alabama. He read the letter and reread it. I think he put it in his pocket, because I haven't found it in my files. He then explained at length just why he had done this; it was all an old story.

In the account of events in the lives of the Meads in 1945, the two most important events remain to be reported. The war finally ended, and son Jeremiah was married. Jere didn't get married because the war was over; in fact, the wedding was after VE day and before VJ day. The European phase of the war was over on the seventh of March, and the Japanese were through on the second day of September. The wedding was on the twenty-fifth day of August.

On that day Jeremiah Mead and Dorothea Perry were married in a beautiful church wedding in the Second Church of Newton. I won't attempt to describe the bride's gown, but I know it was lovely; I do know that the groom was attired in the uniform of a Pfc. After the ceremony there was a reception at the home of the bride's father, Mr. Donald Perry, one of the finest men we have ever known.

Bertha and I were very happy. We had no daughters of our own, but each of our three sons had married a wonderful girl - that's one way to acquire three carefully selected daughters!

Jere and Dot first lived in an apartment in a group of apartment buildings called Holden Green in Cambridge. Jere was in his last year as a medical student at Harvard. The following March (1946) they moved to an apartment on Park Drive in Boston, nearer the Medical School and convenient to Boston City Hospital, where Jere was to have an internship.

March 20, 1959

Dear Family,

This story is rapidly catching up with the present, and it is much less fun to write. I have been tempted to chop it off and call it finished. But the things I am writing now will be "when I was a little boy" to the grandchildren, so perhaps I should write this tail-end of my story, just for the record. Last Sunday we had a wonderful day. Dot and Jere were over for dinner with us, and so were the four grandchildren: Jere, Warnie, Andy, and Sally. Irene prepared a very nice dinner, including the mashed potato that the kids always expect when they come here. After dinner Jere, Warnie, and their father came down to the basement with me to play billiards, which they always seem to enjoy. Andy was there as a spectator. After looking at my strange collection of pictures, specimens, and gadgets on the narrow shelf around the room, he remarked, "Granddaddy, I think you have a very pretty cellar." This labeled Andy as a true New Englander; in New England there are no basements, just cellars. I told him that I hoped he would remember his grandfather as a funny bald-headed old man who lived, worked, and played in the cellar.

We begin this slice of the story with the year 1946; and I assure you it was a pretty mixed-up year, full of events that range all the way from wonderful and happy to extremely unpleasant.

At the beginning of the year Bertha was ill with influenza, and I was day and night nurse, cook, and housekeeper, as well as a professor at Tech. I managed to find a "practical nurse," but she turned out to be no good at all. Bertha was really ill. By trying in every possible way, I at last found a graduate nurse who promised to come. I got her onto the job, through a heavy snow storm, and things looked better, but I was still the cook for the three of us. Then Bertha became so ill that the nurse was worried. I phoned Dr. Siscoe, who ordered her to the New England Deaconess Hospital and secured a room for her in Baker Memorial. She and the nurse both went to the hospital.

Bertha was ill with infectious hepatitis for several weeks. Eventually she started to make a satisfactory recovery, but Dr. Siscoe would not permit her to come home until we had adequate help in the house. The fact that I had secured a nurse was a miracle; and I was now faced with the necessity of pulling off a more difficult one if I was to get my wife back. I telephoned the employment agencies in Boston at least every hour for days, and at long last one of the best agencies said she might have my problem solved. A young Canadian woman whom she could highly recommend had just come in. I asked the agency woman to give her some money, put her in a taxi, and send her to the Massachusetts Avenue entrance of M.I.T. I sent one of the stenographers in the office to meet her at the entrance and guide her to the office. The "young woman from Canada" finally arrived at the office, and she surely looked good to me. I proposed that we go out to the house to talk about the job, so that she could see what it was like. I expected her to say she couldn't take a position in such a large house and that it was too far from transportation. Instead, she said it would be nice to work in a smaller house as her last position had been in one much larger! I told her that it was three blocks from the bus, and was told that the big house had been over a mile from the bus! She took the job!

This was Irene Moores, one of the finest individuals I have ever known. Irene was amused at having been called a Canadian as she was from Newfoundland. She is still living with us, and Bertha and I feel that to say she is wonderful is not an adequate statement.

Bertha and the nurse were back home early in February, and things were running very smoothly. On the eighteenth of the month we had great news from Judson in Long Island. Jane had presented him with a son, Judson Taylor, born in a hospital in Brooklyn. I believe it was the same hospital in which Jane was born and the same doctor who had officiated on that earlier occasion. We now had two grandsons and one granddaughter, and we were very happy about it.

There are so many strands to this story of the Mead family that a few lumps and knots in the fabric cannot be avoided. It is necessary to change from one topic to another without smooth transition. So now, we jump abruptly to Milwaukee and Warren, Maryalice and their family. In January of 1946 Warren left his position with the Milwaukee Journal radio station, WTMJ, and went to California, hoping to get into the more profitable field of script writing for radio productions - commercial or dramatic. This did not work out rapidly enough, so in November of the same year he accepted a position with radio station KERO in Bakersfield, California, where he was joined by Maryalice and the children. They lived in Bakersfield until July of 1951, at which time they moved to Waterloo, Iowa, where Warren joined radio and television station KWWL. Bertha started her annual trips to the West to visit them while they lived in Bakersfield and has continued these yearly visits, usually in May, without missing a trip since 1947.

Now we leap abruptly back to Boston! In March, 1946, Jere became Jeremiah Mead, M. D., and was appointed to an internship in the Boston City Hospital. At this time Jere and Dot moved into an apartment on Park Drive in Boston, much nearer to the Boston City Hospital.

The process of postwar readjustment complicated matters at M.I.T. and in the Geology Department. Instructional work was getting back to normal, but slowly. The Institute was planning a lot of readjustment in space utilization, as much space, new and old, which had been devoted to military purposes would now be available for peace-time uses. A chemical laboratory was being established in the space above us on the fourth floor. This required the drilling of many holes through our ceilings, and we were showered with cement and tile fragments and lived much of the time in a fog of dust. I found out too late that this was bad for me.

Early in the year I received a most attractive invitation from Mr. Louis Cates, President of the Phelps Dodge Copper Company, to make a final study of the United Verde Mine at Jerome, Arizona. The ore in the mine had been exhausted and they were about to cease operations; but before the pumps were stopped, allowing the mine to fill with water, they wanted an outside opinion on the matter of ore they might have overlooked.

Late in the spring term I was astonished to receive, through the Institute mail, a carbon copy of a letter written by Professor Walter Newhouse to President Compton, announcing his resignation as a Professor in the Geology Department in order to accept an appointment on the U. S. Geological Survey. (Newhouse never took the position on the U.S.G.S.; instead, he was offered and accepted the Chairmanship of the Department of Geology at the University of Chicago.) While I was reading this surprising letter, I was interrupted by a telephone call from Dean Harrison. The Dean had also received a copy of the letter and telephoned me for an explanation. I told the Dean that I knew no more about the matter than did he, and perhaps not as much.

Walter's office was only three doors down the corridor from mine, but I wrote him a letter instead of calling on him.

I thanked him for his thoughtfulness in sending me a copy of his letter to Compton and told him of my regret at his resignation. I said that I assumed that he did not wish to discuss the matter with me or he would have done so before writing the letter. I expressed the hope that he would call and tell me about it, but he did not do so. Walter was a strange person. I never had an explanation; I could only guess. My surmise was that he felt he had damaged our relationship when he so obviously registered disappointment at the time I decided to remain on the job at M.I.T. instead of resigning to go with Reynolds Metals as Director of Research.

In the summer of 1946 I made a trip or two to Arkansas. I was not feeling as well as I should and had developed a wheeze in my breathing that annoyed me, particularly at night. One of my medical friends, with whom I lunched at the St. Botolph Club, said my trouble might be due to dust. I remembered the fog of dust at the office and told him about it.

I became really ill late in August and had serious difficulty in breathing. Dr. Siscoe said it was bronchial asthma. I was hospitalized in the New England Deaconess Hospital from August twenty-sixth to the fourth of September, and I had a miserable time. I returned home for only a little over three miserable weeks before I was again forced to become a hospital patient, this time at the M.I.T. Infirmary. There didn't appear to be any hope of licking the damnable malady. All that the doctors could do was to enable the patient to breathe. They did not hope to cure me and said so! At this time I was in the Infirmary from September twenty-first to the first of November.

While I was in the Infirmary, or perhaps it was when I was in the Deaconess Hospital, the Geology Department was moved to new quarters in Building 24. This operation was supervised by Professor Fairbairn, who did not have an enviable job.

I left the Infirmary on the first day of November and tried to get back some of the strength and weight I had lost. I was forced to write to Louis Cates and refuse the attractive job at the United Verde Mine. This was the first of many opportunities that I lost because of the damnable curse of asthma.

On Thanksgiving Day we had both Judson and Jere and their wives for dinner, but I couldn't go to the table. Late in the afternoon Bertha and the two boys accompanied the old asthmatic back to the Technology Infirmary, and it was one of the toughest experiences I can recall. At Dr. Siscoe's suggestion I now was being treated by Dr. Theodore Badger. The change was due to the inconvenience Dr. Siscoe had in coming to the

Infirmary, but I really think doctors in general like to be rid of asthma patients. The doctors can't cure them, and the patients rarely die of asthma, although I am sure they wish they could.

On this trip Dr. Badger came to the Infirmary soon after my arrival. I will never forget how welcome that big intravenous shot of aminophylline was. That was a rather wonderful drug. I had it administered to me not only in big intravenal shots when I entered the hospital, but also as constant intravenous medication for days at a time from a bottle hanging above my bed, as tablets to be swallowed, and as rectal instillations, often self-administered. I learned all the tricks!

I was back home on the twenty-third of December, just in time for Christmas.

Now I must backtrack to pick up an important item in Geology Department affairs. The resignation of Newhouse left us without a competent man to carry on the work in economic geology. We looked over the younger men with ability in this field and related areas, and the excellent suggestion was made that we consider Patrick H. Hurley. Pat had earned his Ph. D. degree in the Department several years earlier and had gone to Wisconsin with Professor Slichter as his assistant or co-worker for the year Professor Slichter was on the staff at Wisconsin. I had heard that Slichter was leaving Wisconsin and talked with him over the telephone about offering Hurley a position at M.I.T. Slichter had no objections and said he thought it would be fine. Pat Hurley was offered an assistant professorship and accepted. This was a piece of good fortune for the Department. Pat has done a splendid job in both teaching and research and is now a full professor and Executive Officer of the Department.

The first part of the year 1947 went very well and I was quite encouraged. I got back into the swing of things as the second term started, and it was pleasant to face the students again.

On the twenty-fourth day of March, Jere and Dot had their first baby - a wonderful boy, born at the Boston Lying-In Hospital and named Jeremiah Putnam. (Dot's mother's family name was Putnam.) And now the score was four grandchildren: Jerud, Judson, Jeremiah and Kathe. We were happy grandparents, in spite of the old man's asthma.

In April a letter from Mr. R. S. Reynolds ended my services as a consultant for his company. The Reynolds Company, like many other concerns, was facing termination of wartime contracts for aluminum and had to economize. I was surprised and a little shocked by the letter. Mr. Reynolds had on many occasions, some of them public, assured me that "since I had saved the company in a critical period by finding bauxite for their plant, I would be retained as a consultant for the remainder of my life"! I guess he just forgot.

On the thirtieth day of May came more bad luck. Old man Bronchial Asthma sneaked up again and sent me to the hospital for the third time, again to the M.I.T. Infirmary. I had a very uncomfortable time there until June sixteenth. On that day I was moved to the New England Baptist Hospital because Dr. Badger felt that I could get treatment there not available at the Infirmary. On the ninth of July they hauled me home once more. What a life! I was getting very tired of asthma, and the only encouragement was the statement that sometimes asthma just quit and the victim didn't have it any more. So that was what I hoped would happen.

In July Dr. Jere ended his internship at the Boston City Hospital; he and Dot and the baby moved to Andover, Massachusetts. Here he was assigned to the Quartermaster Corps of the Army as part of his tour of active duty. His work there had to do with research in physiology, which was what he wanted. During the two following winters he was sent to Canada to the vicinity of Churchill, on Hudson's Bay, to make investigations for the Army under arctic conditions.

During July and August I traveled to Silver City, New Mexico, by rail and spent about four weeks in the bright, dry climate. This was supposedly consulting work for the U. S. Smelting Company, but it looked much like charity on their part. I wasn't strong enough to do much geological work in the field, but I improved and felt much better before I returned to Belmont. Many people thought the dry climate and a higher altitude might lick the asthma. I don't believe it made any difference in my case.

At the beginning of the fall term, in September, 1947, I was beginning to feel rather optimistic. I hadn't been in a hospital since the ninth of July, had recovered weight and strength, and thought perhaps the curse of asthma had departed. Our departmental secretary was leaving, and I asked the personnel officer to try to find a secretary for us. A few days later he telephoned that he had a candidate. He said she was a young woman, not a girl, and that she had had a lot of commercial office experience. I asked him to send her over for an interview and she came promptly. A very nice-appearing person, who said her name was Pauline Richmond. She appeared sad and nervous - almost timid - and smiled for the first time at the end of the interview, when I told her to report for work on Monday. I telephoned the personnel officer that we would take Richmond if Grant didn't get there first. I regretted my wisecrack because I had to explain at length about Grant and Richmond, and he still didn't think it was funny.

The new secretary was Polly, Pauline Richmond. The best secretary any Technology Department ever had. She is still there, practically running the Department, in a nice way. And I don't believe I have seen her look sad or nervous since that first interview.

In September Judson wound up his work with the wartime research and development at Garden City. He, Jane, and Juddy came to live with us at Belmont while they looked for a house or apartment. Jud entered M.I.T. as a graduate student in geology. Sometime later in the year they rented a small house on Alpine Street in Cambridge.

The beginning of the fall semester in September, 1947, found me back on the job and in pretty good shape. I was faced with an unpleasant, worrisome situation. I have told you, in an earlier letter, how the Mining Engineering Department had been terminated by the findings of a special committee. I had heard rumors that the Geological Department was on the skids and soon to go the way of Mining Engineering. I was aware that Dean Harrison (Dean of Science) was unfriendly to the Geology Department and to me personally. So I took the bull by the horns, went to Jim Killian, Acting President, told him of the rumors and the resulting apprehension on the part of the Geology staff, and asked for a definite statement from the administration as to the future of the Department. I wished to put the staff at ease or to advise them to look for new positions elsewhere, and I did not wish to invite young men to join the staff of a moribund department. I told all this to Killian. He said it was news to him; he had heard no unpleasant rumors or gossip about the Geology Department. I told Dr. Killian that his friendly attitude was gratifying, but thought a more formal statement by the Institute administration was needed. He promised to give careful thought to the matter.

I started my teaching schedule as usual and things went very well until November when the curse of asthma again climbed on my back for a ride. On the second day of the month I was again carted off to the Infirmary at the Institute. They tried a variety of things and I was quite willing to be a guinea pig as long as there was any hope of improvement. In one of the experiments they almost killed me with a vaccine some expert concocted, but it neither killed nor cured.

While I was a patient at the Infirmary, I received a letter from Dean Harrison which was hardly good medicine for a sick man. The Dean wrote that there had been consideration of the future of the Geology Department (I had asked for this in my talk with Killian), and a special Visiting Committee had been appointed to investigate the situation and report to the Corporation. He kindly said that the meeting of the Committee would be deferred until I had recovered sufficiently to attend. He requested me not to disclose the matter to members of the department staff, as he did not wish to give them undue concern. So the defense of the Department was up to me personally. I was ill, but I was angry over the tone of the Dean's letter.

Again, after three weeks in the Infirmary, I was taken for a ride to the New England Baptist Hospital, where they did more weird things. On the day before Christmas I was taken home in an ambulance; the driver lost his way, and I had a nice long ride. It was good to be home for Christmas, even if I did weigh less than one hundred and thirty pounds and could just manage to walk. My normal weight had been one hundred and eighty so I felt as light as a feather.

It was almost the end of the year, but one of the best events of 1947 was still to happen. On the last day of the year Jane presented Judson with a second son, Thomas Doran, born at the Boston Lying-In Hospital. Now our score was five grandchildren - four boys and Kathe!

Early in 1948 I told Dean Harrison that I was ready for the inquisition, and the Committee was called together. So far as the other members of the Department were concerned, it was just another meeting of the Visiting Committee. I remember the names of only a few of the members of the committee, but I know that Bradley Dewey, as a member of the Corporation, was Chairman and that Bill Hotchkiss and Tom Nolan (Nolan is now Director of the U. S. Geological Survey) were present. Mr. F. J. Chesterman, member of the Corporation, and Victor Dolmage, an alumnus of the Department, were also on the Committee.

We met in the Dean's office, and he at once assumed the role of attorney for the prosecution. It was apparent to all that his objective was to get rid of the Geology Department. I was mad as hell and fought him on every point he tried to make. The details were interesting, but there is no need to review them here. It suffices to say that the Committee turned in an unanimous report urging that the Geology Department be continued, that its space and physical plant be improved, and that the Departmental appropriation be increased. I had won the scrap, and I was happy about it.

But problems kept popping up! At the Institute all students had the same required program of subjects in their freshman year. At some date during the second semester each freshman was asked to indicate his field of specialization; that is, to indicate the subject or department in which he intended to major. In this interdepartment rivalry for new students, geology was at a great disadvantage. Physics and chemical engineering and other technical fields, such as metallurgy, had been greatly emphasized during the war. No one had ever heard of geology - it wasn't taught in high schools or prep schools. But we had to have students in order to survive.

Special "orientation" lectures were given by the various departments, but ours didn't sell geology effectively. In Department meeting I suggested that we write letters to the freshmen and arrange personal interviews, but my staff thought this idea was not practical. Professor Whitehead, Chairman of the New-Student Committee, thought the idea was ridiculous.

Entirely on my own initiative, and with Polly's help, I sent a letter, personally addressed, to each freshman. In the letter I told the freshman something about geology and my own experience as a geologist and asked him to come and talk with me. A return postcard was enclosed on which the student could indicate his wish for a definite appointment for a talk with me. The response of postcards was astonishing. I was busy for weeks talking with freshmen, singly and in groups, and I enjoyed every minute of it. When the elections were made, geology had a very satisfactory enrollment of new students. My scheme had paid big dividends. A year later the responsibility was back in the hands of Walter Whitehead, who came around with a rather sheepish smile and asked for a copy of the letter I had sent to the freshmen. He repeated the letter routine and it worked again.

I carried a full teaching load during this semester and enjoyed it. I was beginning to feel pretty good and thought that perhaps I had seen the last of Old Man Asthma.

In the early summer I ventured into the southern Appalachians to take a look at three dams under construction by ALCOA. Growdon referred to them as dams of which I was the grandfather! Growdon was on the trip to the dams and at that time told me of an immense hydroelectric project ALCOA was contemplating in the far north. He asked me to undertake the field examination of the project and report on its feasibility so far as geological features were concerned.

The plan involved building a dam on one of the main upper tributaries of the Yukon River, near the town of Whitehorse in Northwest Territories, Canada. This dam would back up the water in a long chain of lakes, the last of which was Lake Linderman, lying at the northern base of the Coast Range and at the northern terminus of the famous trail over Chilcoot Pass. This trail over the Pass and the chain of lakes constituted the route followed by the prospectors in the rush to the Klondike in the '90's.

I told Jim Growdon that my mountain-climbing days were over and I couldn't even climb a decent hill. He said he didn't want me to climb any mountains, just recruit a crew of competent young assistants, find a comfortable place to sit, and let them bring the rocks to me. He said they hadn't built a dam in twenty years without my O.K. and insisted that I do this for him. It was a challenge I couldn't turn down. To hell with the asthma! I'd do this one if it killed me! Besides I had been fired from my job with the Reynolds Company and I was free to work for ALCOA again.

In the fall of 1948 I began the first semester with a swagger. I was feeling fit again, and we had a wonderful enrollment of students.

But as has been said before, pride goeth before a fall. In October I fell, figuratively speaking, flat on my face. I was carted off to a hospital, with more asthma. I was mad and discouraged, but I was to have a change of scene. A new hospital, the Baker Memorial at the Massachusetts General, and a new doctor, Frederick Kranes. I told you in an earlier letter that I thought doctors did not like to have asthma patients. Dr. Theodore Badger had found it inconvenient to see me at the M.I.T. Infirmary and he suggested and highly recommended Dr. Kranes, in case I had more asthma. So I called Dr. Kranes, who secured a room for me in Baker and took good care of me there. The hospital was astonishingly better than any of the ones I had previously existed in. I went in on the sixteenth of October and crawled out on the fourth of November.

On the twenty-fourth of November I had some cheering news - and I needed a bit of cheering. Over the long-distance telephone Carl Schmedeman, Chief Geologist for the Reynolds Company in Little Rock, Arkansas, said that Mr. Reynolds had called him the previous evening to ask Carl to call me and see if I was "still mad" over having been fired, and to see if I would come back as a consultant. I told Carl I had never resented being fired, was just surprised, and that I would be glad to be a consultant for Reynolds Mining Corporation but not for Reynolds Metals Company. Carl reported our conversation to Mr. Reynolds and a few days later I had a telephone call from Walter Rice, President of Reynolds Mining. Walter expressed pleasure at my willingness to return, and said I had been listed as a consultant at what I thought was a very satisfactory fee.

I told Walter about the agreement to go to the Yukon country for ALCOA. He said that would be fine, since the arrangement was made when I was not under a retainer from Reynolds. I believe I have the distinction of being the only person ever to work for ALCOA and the Reynolds company at the same time.

The second semester was to be my last as Head of the Geology Department, as I was to retire at the end of the school year. I was to continue as Special Lecturer for a period of five years, if I chose to do so, at half the salary I had been receiving. I liked this arrangement and accepted the appointment as lecturer. I would enjoy teaching and contact with the students and would be relieved of all administrative duties and responsibilities.

During the second semester I carried on my teaching schedule as usual and moved all personal property and the files of professional correspondence and reports to very good office space in the basement of the Belmont home. I felt no trace of regret, no sadness or depression over retiring. I was very pleased and happy about it.

Judson completed his graduate studies and received his degree of Doctor of Philosophy in February. He accepted an appointment as Assistant Professor of Geophysics at Indiana University and planned to move to Bloomington in the fall. In the meantime, during the spring and most of the summer he did geophysical work for the U. S. Smelting Company in Utah and New Mexico.

In March, Doctor Jere, Dot, and young Jere moved from Andover to a house on California Street in West Newton. Doctor Jere had accepted a position as Assistant Resident Physician at the Boston City Hospital. But that was not the most important event in the Jere-Dot family in March. On the twenty-eighth of the month Warren Perry was born in the Boston Lying-In Hospital. And now the score was six grandchildren, five boys and Kathe!

Through late winter and early spring I had employed three excellent assistants to go with me to the North Country; we had assembled the instruments, materials and equipment we would need to take with us. We made the trip by rail to Seattle, and from there to Whitehorse by plane. Bertha had gone earlier on her annual trip west to visit the children and grandchildren. I met her in Chicago, and we were together for a few hours before departing in opposite directions.

The trip was interesting but uneventful. We had a good look at the Coast Range from the air, and it looked pretty rugged. At the request of an old timer who had been in the Klondike gold rush, the pilot flew directly over Chilcoot Pass, which was part of the area we would have to report on. Two of the boys, Brace and Baker, later made the trip over the pass on the snow.

Our field work lay in two areas about one hundred miles apart - the area around the damsite and the Chilcoot Pass area, under which the proposed tunnel would pierce the Coast Range. The damsite area was near Whitehorse and was the first job to be done, so we found quarters in the very comfortable old Klondike Hotel. A large frame building - a fire-trap, if I ever saw one. The damsite was in Miles Canyon, where the river from the great area of lakes to the south flows through a famous gorge. During the Klondike gold rush days, a narrow gauge line had existed for moving boats and goods around the gorge, but many made the dangerous trip in boats, and many lives were lost. Those were rugged times, later recorded in the stories of Jack London and the poems of Robert Service, whose neglected cabin still stood near the river. The area around the damsite had been set aside as a park. The only bridge across the river for many miles either way was a suspension footbridge across the gorge, and this was extremely useful to us.

Jim Growdon arrived in Whitehorse before we had completed our work in that area. He made a trip down the railroad to Bennett and back in a motor-driven workcar to have a look at the lake region. Before he took the trip, Jim had been amused when he heard that we had an experienced grizzly bear hunter on our staff of local field helpers. When he returned, he had learned about the bears and the necessity of always having protection in the field. Grizzlies are the only wild animals in the north country that will attack without provocation, and they are not scarce in that area.

When the work at Whitehorse was completed, we moved down to Bennett. From a point near Bennett the party could get to Lake Linderman by boat and thence up the lake to the upper portal-site of the tunnel and to the foot of the pass which lay over the line of the tunnel. The weather was cold, wet, and windy. I remained at Bennett. The party, including Growdon, made a nasty trip in small boats with outboard motors. At Bennett I got a place to sleep in a room over the railroad lunch-room. It was one of the coldest nights I ever spent. With all my clothes on and all the blankets I could find, I couldn't stop shivering. And worst of all, there was a wonderful bottle of Scotch whiskey in my big briefcase, in the boat on its way up Lake Bennett. I had expected to go, but at the last moment Growdon ordered me to stay, because one more would have come close to swamping the boat. This was most fortunate because they got into very rough water and very nearly were swamped without me.

The following morning I thawed out and took the train down to Skagway. Here my concern was to find a competent guide to go over the pass, meet the boys, and guide them back over the mountains. A young man who lived with his wife and small family near Dyea, at the upper end of Lynn Canal and near the south end of the trail, was recommended to me as an experienced guide who had made many trips over the pass. I sent word to him and he came to the hotel to see me. He was a University of California graduate. I liked his appearance and his answers to my questions. I employed him and a younger associate to start the following morning to guide our party back over the pass.

The next morning I was visited by a group of local super-patriots. They asked if I had employed a certain young man. I wanted to know why they asked, and they told me, "He is a communist!" I told them that I hadn't inquired into his political leanings or his religious beliefs when I employed him. I asked if they knew of a better guide and they admitted he was the best. I told them that he was on his way and if any member of the committee wished to try to overtake him and bring him back it would be all right with me, provided they find an acceptable replacement.

The young communist did a fine job, met the boys, and brought them back. He was a very likable fellow, with a charming wife. Something in his past experience had given him a strange mental quirk. Before I left he came and apologized to me about not telling me that he was a communist, hoping that it had not embarrassed me. We all liked the boy and were sorry for him.

Jim Growdon came down to Skagway by train. When the plane from Juneau flew into Skagway, Jim engaged it for a special trip for the two of us over the pass and back at a low-level flight. It was a bright day, and we had a wonderful view of the tunnel-line from the air.

I returned to Seattle on a convenient boat, and the boys returned to Whitehorse, where they picked up their instruments and baggage and took the plane to Seattle. Back in Cambridge and Belmont we had the report to write and maps to make, and we built a relief model of the dam in my basement shop. The report, maps, and model were shipped to Pittsburgh.

I had been very fortunate to escape an attack of asthma on the trip. I realized that this job was my swan song as a consulting geologist, and it was pleasant to finish on a really big one. The Whitehorse-Skagway hydroelectric project still lies dormant. It has not been possible to work out satisfactory arrangements with the Canadian Provinces concerned.

I started the 1949 fall semester with a heavier schedule of lectures than I had carried before. It was wonderful to be free of administrative worries. I had no office at the Institute, just drove down for each lecture and then drove home.

One day when the fall term was nicely started, I was once more very abruptly laid low by asthma. Dr. Kranes came early in the evening, and I told him he might as well get a room for me at Massachusetts General. He said that this time he would first try something else, gave me a sedative, and returned later with some white tablets: cortisone. In less than twenty-four hours I had no asthma at all and went back to work. Since that time I have kept asthma under perfect control with that wonderful drug. I have been fortunate to be able to take cortisone without bad side effects. I have finally developed the "bovine countenance" characteristic of cortisone eaters. But my appearance doesn't worry me if I can breathe with comfort.

The remainder of the academic year went smoothly. I was enjoying the teaching and the students, and had ceased to worry about asthma. In the spring Bertha made her annual pilgrimage westward to visit the children and grandchildren.

In July, 1950, Dr. Jere completed his work as Assistant Resident Physician at the Boston City Hospital and accepted an appointment as Instructor in Physiology at the Harvard School of Public Health. This new position was to be important for me as well as Jere. He immediately began research in the physiology of breathing and saw that certain physical measurements would be of importance to the work. Jere knew the types of instruments he needed but could not get them, because they had never been designed or made. He brought his problems to his gadget-minded father, with a basement shop. We had a wonderful time inventing and designing the instruments and finally built them in the shop in the basement. They worked as planned! I had a grand time, and Jere says the gadgets helped him in his work. He told me a week ago that all of the things we built in the basement shop are still in use. I never did anything that gave me more satisfaction or pleasure.

After Judson moved to Indiana, we saw him and Jane and their boys at least twice a year, in the late spring and early fall. Jane's parents, John and Sophie Stanley, had a summer home on a farm near Laconia, New Hampshire, and Jane and the boys spent all their summers there. Jud brought them out from Indiana by automobile and returned each fall to take them home for school. Belmont was at least an overnight stop on both trips, and these visits were two very important events of the year for the gransparents. In 1953 Jud and Jane bought a lakeside cottage on a beautiful lake within a couple of miles of the Stanley home. Here the small boys have learned to swim and to handle boats, quite like their father and uncles did when they were boys at the cottage on Lake Mendota in Madison.

In the spring and summer I had more time for gardening than in earlier years. I enjoyed raising tomatoes, beans, and other garden truck, much of which I processed and quick-froze. We had a large, twenty cubic foot freezer in the garage and enjoyed the frozen vegetables from the garden throughout the winter.

My days of traveling to do consulting work were practically over, and each year was much like the last. In the winter of 1951 I was shocked and saddened to hear of the sudden death of Carl Schmedeman, of a cerebral hemorrhage, which occurred while he was on a business trip for the Reynolds Company. Carl had been one of my boys. He had been in my Boy Scout Troop in Madison, one of my geology students in Madison, and finally Chief Geologist for the Reynolds Metals Company. Mr. Reynolds, Mr. Rice, and all of Carl's other associates felt the loss keenly. Mr. Reynolds himself wrote a fine tribute which was passed as a resolution of the Directors. The Reynolds Company also set up a substantial trust fund for the education of Carl's children.

In 1952 Doctor Jere was promoted to an assistant professorship in the Harvard School of Public Health. Dot and Jere celebrated this event by adding a third son to their family of boys. Andrew Washburn was born at the Boston Lying-In Hospital on the ninth day of May. Once more the happy grandparents add up the score; now there are six grandsons and Kathe!

Bertha and I are pleased to have one family of children and grandchildren living fairly near to us. The little white house where Jere and Dot lived in West Newton was only about twenty minutes away by automobile. In 1953 they bought a home in another part of Newton called Waban, on Pine Ridge Road. This is a much larger house with plenty of front and back yard and much better adapted to their family needs than was the one they left.

On the ninth of November, 1952, Jane's father, my very good friend Jack Stanley, died at the Mt. Auburn Hospital in Cambridge, after a long illness. Jane and Jud were on their way here by automobile from Indiana and arrived in Belmont the day after he died. Mrs. Stanley was living at the apartment they used each winter at the Commander Hotel in Cambridge. This was a very sad time and meant a great loss for all of us. Jack was a most charming, likable and considerate person. He and I had enjoyed a great many games of cribbage together. Bertha and I were very fond of Jack, as was everyone who knew him.

One of the most important events in the Mead family in 1953 occurred on the ninth day of December in a hospital in Indianapolis. This big event was the arrival of John Stanley, third son of Jane and Judson. There had been a tentative plan to have John Stanley arrive at the Lying-In Hospital in Boston, as had his brother Tommy. We had looked forward to Christmas with the Indiana family, but Johnnie apparently didn't want it that way. Now the score of grandchildren was seven boys and Kathe.

In July of 1953 we were saddened to hear of the death of the father of Maryalice, Mr. William J. Riley, who died in Milwaukee, Wisconsin, on the twenty-third of that month. I had met Mr. Riley only very briefly at one time in Milwaukee, but Bertha was much better acquainted with him and says he was a wonderful man. He had practiced law in South Milwaukee for many years. He died at the age of 78 years. His widow, Maryalice's mother, still lives in South Milwaukee.

My teaching at M.I.T. had gone on year after year as usual, but my five-year period as Lecturer was drawing to a close. The year 1953 - 1954 was positively my last year as a teacher. This time I really did retire. I believe I told you in a previous letter that my last lecture, terminating just fifty years of teaching, was before a group of senior and graduate students in Civil Engineering; the subject was Engineering Geology. I may also have told you previously that at the end of the hour I called attention to a brown paper bag on the large lecture table and suggested that someone might forget his lunch. One of the boys suggested that I examine the bag. This I did and found a beautiful pinch bottle of Haig and Haig with a very nice note from the boys. I was really quite touched. I gave every boy in the class a final grade of A in the course. This may not have been in accord with Institute regulations, but they couldn't fire me!

I have told you, in earlier letters, that each spring Bertha went west to visit either Warren and Maryalice, or Jud and Jane, or both. In the spring of 1955 she went to Waterloo, Iowa, to see Warren and Maryalice and the kids. While she was there, Jane made a rather unexpected trip to Boston for some surgical work, bringing the baby, Johnnie, with her. She left the baby with her mother, who was spending the winter at the Commander Hotel in Cambridge. After Jane was well on the way to recovery, I made the rather unpremeditated decision to drive my new Lincoln car to Bloomington to meet Bertha. She had stopped in Bloomington on her return trip from Iowa to be with Jud, who was alone with the two boys. I drove to Bloomington without any difficulty, spent a couple of days there, and with Bertha drove up to Berlin, Wisconsin, to see my sister Arlisle and her husband, Dr. Arthur Wiesender. From Berlin we drove north to Sault Ste. Marie, where we spent the night. We crossed into Canada and crossed back into New York State over the Thousand Islands Bridge. Spent the last night of the trip at an excellent hotel in Glens Falls, New York, and arrived home safe and sound. We enjoyed the trip very much. I'm afraid it was our last long automobile trip, but it was a dandy.

I was back in time for the planting in the garden. I had become an enthusiastic gardener and a pretty good one, but I didn't do any work on the lawn and left the flowers to the tender care of Bertha and Irene. Irene had the greenest of thumbs, and everything she touched was sure to grow.

Jere and Dot were doing wonderfully well in the big new house, but they had one more room to fill. So on the twenty-fifth of June, again at the Boston Lying-In Hospital, there was a very special "blessed event" when Sarah Taylor arrived. Just imagine, a sister for the three brothers. So the grandparents' score of grandchildren now was seven boys and Kathe and Sally!

In 1955 I got pretty spry. Made a trip to Arkansas for the Reynolds Company in January. This I enjoyed. In July I was invited to visit two of the rock-fill dams Jim Growdon and I had devised. These were the Tuttle Creek and the Bear Creek dams. This type of structure made it economically feasible to build control dams on the smaller streams where the cost of concrete dams would have been prohibitive. I had to climb a couple of hills, but by taking it slow and easy I made it and was quite proud of myself.

I haven't mentioned asthma for some time. It still poked up its ugly head from time to time, but a little more cortisone took care of that. I always carried a vapo-nepherine nebulizer, which was an effective quieter of asthmatic wheezes.

In October we were on the alert for news from Warren and Maryalice in Waterloo. Bertha became a little anxious about it, as is customary with expectant grandmothers. On the eighteenth of the month we were happy to have a long-distance telephone call from the proud father announcing the arrival of Stuart Robinson and assuring us that all was well. Once again the grandparents add up the score: now eight grandsons and two granddaughters. To date, the oldest and the youngest of the grandchildren are children of Warren and Maryalice.

Old age was definitely creeping up on Grandfather Mead, and the sight in one eye was getting rather dim. Dr. Carl Cordes Johnson told me that I had a well-developed cataract in my right eye but that it could be taken care of by an operation at any time. Before that could be done, I had a little digestive trouble which appeared to be a minor functional affair, but the keen diagnostic sense of Dr. Kranes led him to send me to an expert X-ray doctor, who really gave me the works. He found what Dr. Kranes called an annular tumor around the colon. This of course was malignant, so I promptly went to the Massachusetts General Hospital, where Dr. Claude Welch and a team of skillful assistants neatly removed the darned thing on April 26, 1956. There wasn't an unpleasant thing about the party at the hospital, but I would most sincerely hate to have a repeat on that X-ray examination. I went into the hospital on April 24 and got home on the ninth of May.

I realize that it is bad taste to tell you all these unpleasant details. Please understand that I have undergone an interesting and inevitable metamorphosis, from an active professional geologist to a much less active pathological specimen. There isn't much left of this story, as it is rapidly approaching the present, but I warn you that the experiences of this specimen will be recorded; there may be more Men of Medicine in the Mead family, and they might be interested.

In November of the same year I finally got around to having the first cataract operation. This was absolutely painless and, to me, very interesting. I was home in less than a week, and a few weeks later had a lens fitted for that eye. But there is a joker in this situation! I could see nicely with either eye but not with both at the same time; sounds crazy, but it's true. A contact lens on the cataract eye would probably have helped, but it looked like a lot of bother for an old man.

So for about a year and a half I continued to use the unoperated left eye and carry the operated eye as a spare. But a cataract in the left eye finally forced me to use the right eye, and I found it was wonderfully good when I became accustomed to it. That made the decision to have the cataract removed from the left eye an automatic one. This was done last November, and at long last I again have binocular vision. Let me say to anyone who is interested, please don't waste any worry on a cataract operation. Get a competent eye surgeon and expect to enjoy the whole affair.

Now that I have had the uninterrupted fun of telling about my operations, I will go back and pick up the story of the affairs of the others of the Mead family.

The program of Jud and Jane and their family is much the same each year. Jud is a busy Associate Professor during the academic year. As soon as school is finished in May, he drives with the whole family to the cottage near Laconia, stopping here for at least one night. Then he returns by plane to Indiana and drives west to Montana, with a caravan of students, to the Indiana University Geological Summer Camp. Jud is very enthusiastic about the camp and the geological and geophysical work done there. In the autumn he flies back to spend a few days with Jane and the boys at their New Hampshire cottage, after which they make the long drive back to Bloomington. Sometimes, but not always, they make an overnight stop with us in Belmont.

In the latter part of 1956 Dot's father, Mr. Donald Perry, suffered a heart attack and was hospitalized for several weeks. He came home early in 1957 and lived a very careful life in his beautiful home in West Newton, not far from where Jere and Dot had lived. He was comfortable, cheerful, and optimistic about his future. In May Mr. Perry suffered a second attack, which was immediately fatal. This was a very sad time for everyone who knew Don Perry. I never knew a finer man. He was recognized as the top man in the field of accounting and was a lecturer at Harvard in this subject. Personally he was gracious, lovable, and attractive and devoted to his children and grandchildren. He and Jere had played squash together and had many common interests. These things, of course, have to happen, but they are hard to take.

We have more opportunities to see Jere and Dot and their wonderful children because they live here in the Boston area. Jere is a very busy Associate Professor in the Harvard School of Public Health. He has one or two long trips each year to attend conferences or deliver lectures. In the summer of 1957 Jere and Dot went to Berne, Switzerland, where Jere had been invited to lecture. Afterward they spent some time in France and in England. They crossed the ocean in separate planes, each way.

The writer of these letters finishes the job.

May 9, 1959

Dear Family,

After twenty-six months and with twenty-one letters, the story of the Mead family has been brought up to date. Before signing off it seems appropriate to review recent events and to try to give you a brief sketch of the family as it is today.

Aunt Mary Robertson still lives in the same old home in Plymouth which she and the young dentist Will Robertson built nearly seventy years ago. Aunt Mary is now eighty-eight years old. Her only daughter, Elizabeth, makes her home with her mother. An only son, Clark, born on the first day of January, 1900, is a prominent and most successful Milwaukee attorney.

My sister Arlisle and her husband, Dr. Arthur Wiesender, continue to live in Berlin, Wisconsin, where Arthur has practiced medicine for over fifty years and is still a very busy doctor. Their only son Arthur, who has a B. Sc. degree from the University of Chicago, will be graduated from the Marquette University Law School in June of this year. He will practice law in Berlin as a partner of the District Attorney. Arthur was married several years ago to Ira Opik, who had been a friend and associate of Arthur's sister Margaret in Europe. Ira's father is an internationally known geologist, now holding a position in Australia.

The older Wiesender daughter, Margaret, has been in foreign service for the United States government since about 1946. First with the U.N.R.R.A. she helped to organize one of the first receiving centres for war orphans, at Wartenberg, Germany. The second year she transferred to I.R.O. in Munich, and later became Chief of the Seventh Area in South Bavaria, which position she held for five years. Margaret then accepted an appointment as Refugee Specialist and was stationed at the American Embassy in Athens, Greece, for four years. Her mother and father visited her in Athens and returned with an interesting story and a splendid collection of color-slides which Dr. Arthur had taken. Margaret was transferred to Vienna during the Hungarian revolt and then to Frankfurt, Germany, where she is stationed at this time. She has made an enviable record in a series of important assignments. Marnie won a B.S. at the University of Wisconsin and a Master's degree in Psychology at the University of Chicago, and served on the Illinois board for Juvenile Research prior to beginning her work abroad. Quite a gal and quite a record!

Margaret's younger sister, Carolyn, is at present teaching in California. She served as Dean of Women at Ripon College, near Berlin, Wisconsin, but gave it up because she didn't like deaning. She holds a Master's degree in Anthropology from the University of Chicago and plans to teach at Leland Stanford University next year and work toward a Ph. D. degree.

At the time Bertha and the boys were enjoying summers at the cottage on Lake Mendota, the cousins, Marnie and Carolyn, were fairly frequent visitors. Both were fine swimmers and sailors and often served as part of the crew in the sail-boat races.

My sister Jessie, Mrs. Ralph Rose, is living in Madison, Wisconsin. Her daughter, Jane, is engaged in secretarial work in Tucson, Arizona. Jessie's son, John Creighton, won his Ph. D. at the University of Wisconsin and is a member of the staff of the Geology Department there. He is a geophysicist, specializing in gravimetric measurements. His work has involved extensive travel and his most recent long trip was to the South Pole in connection with the Geophysical Year program. John married Phyllis Hoge. They have three children.

Now we return to 88 Rutledge Road in Belmont, where Bertha, Irene and I still carry on - and review the present situation in this branch of the Mead family. As I write this letter, Bertha is away on her annual spring trip to the Warren Mead family in Waterloo, Iowa. I talked with her last evening over the telephone and she said the family there is well and happy. She says Warren is a very busy man as he serves in many capacities for the radio and television station KWWL. He not only assists in the management of the station and the arrangement of programs but acts as announcer or master of ceremonies for either radio or television. In addition to these duties he is a camera reporter subject to rush calls for anything from fires and auto accidents to tornadoes. She says it is a very happy family. Jeremiah and his wife Dorothea are in California for a visit of several weeks where Jere is serving an appointment of two weeks as Visiting Professor at the University of California Medical Centre in San Francisco. Before returning he will lecture at one of the medical schools in Los Angeles. Judson is busy winding up the school year at Indiana University in Bloomington. In July he will go to the Indiana Geological Field Station in Montana. Jane and the three boys will come east in July to spend the remainder of the summer at their lake cottage near her mother's home in New Hampshire. Jud will join them there in the fall for a brief vacation before returning to Indiana in time for the opening of the schools.

Bertha will be home next week and we hope to have a good summer right here in Belmont, with the garden and the flowers and occasional visits by the children and grandchildren. The growing season is abnormally late this spring and much remains to be done in the garden. I enjoy the work with the flowers, vegetables and weeds and can still do a fairly good job, but I don't cut the lawn or spade the flower beds.

We have African violets, blooming profusely, in the house. These are propagated in the basement from leaves, under fluorescent lights, and they appear to like the environment just as well as tropical Africa. There are at least one hundred plants in bloom on top of my row of filing cabinets here in the basement; the violets and I share the same fluorescent lamps, which illuminate the typewriter as I type.

Bertha keeps busy with her plants, her braided rugs, and the Pennywise Thrift Shop. During the winter we all have a lot of fun with the wild birds. We have a row of three bird feeders where they can be seen from the windows in the kitchen, and a surprising variety of birds come to feed. The blue jays like peanuts in the shell, and Bertha has a special feeder we call the peanut tree for them. Last winter a pair of mourning doves were frequent morning visitors to feed on the spilled seeds beneath the feeders. There are two gray squirrels who come regularly for peanuts and take them from our fingers.

Bertha has a large plant-porch with a lot of house plants, also a variety of African violets in the window in the breakfast room. Her plants take a lot of care and attention, and we all enjoy them.

But I think Bertha's best fun comes from her work on braided rugs. She has been making them for years and has no record of the number, but there have been many. She has made several for each of the girls, Maryalice, Jane and Dot, and for many of her friends. The rugs are truly beautiful - each new rug always seems to be prettier than the others.

Birds, plants and rugs do not complete her program. She goes to the Pennywise Thrift Shop two days a week. I told you in an earlier letter that this is an enterprise of the Episcopal Church. Bertha enjoys seeing and talking with the customers, who constitute a broad sample of the inhabitants of downtown Boston.

I am happy and reasonably well. Very glad to have binocular vision again. Having had two cataract operations, the excellence of my vision really surprises me. I find that it is much more fun, and probably safer, to drive a car with two eyes working instead of one.

I confess to mixed feelings about these letters. At times I am glad I wrote them and that the job is finished. At other times, particularly when I am awake in the night, I have serious misgivings and wish I had never started them.

I know I have related a lot of trivial things and omitted important items. I have been disgustingly boastful at times and have gone into too much detail about matters that might well have been omitted. I always have been guilty of talking too much, so now I have written too much! But it is too late to rectify the matter, and I can only say, Dear Family,

Love to you all,

W. J. M.

Postscript. I hope that at some future time, perhaps fifty years from now, one of the children or grandchildren may be inclined to bring the story of the Mead family up to date. With this possibility in mind I venture to suggest that each of the three branches of the family promptly appoint a Keeper of the Records whose duty will be to write down in a suitable record book all of the interesting and important events, with dates, as they happen. This would be a wonderful help to the writer or writers of the next section of the story.

W. J. M.

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